41. d. 76. 76.

THE VANITIES OF *Philosophy & Physick:*

TOGETHER WITH

Directions and Medicines easily prepared by any of the least Skill, whereby to preserve Health, and prolong Life, as well in those that live Regularly, as others that live Irregularly.

Comprizing moreover

HYPOTHESES different from those of the Schools throughout almost the whole Art of Physick, and particularly relating to Indigestion, and other Diseases of the Stomach, Fevers, Consumption, Stone, Gravel, Suppression of Urine, Apoplexy, Palsie, Madness, Diseases of the Eyes, and others: With Variety of Medicines, and Rules whereby to make particular Choice out of them.

The whole being a Work very useful to all, but especially to those that have any Relation to the Art of Physick.

By *GIDEON HARVEY*, M. D.
The KING's Physician to the *TOWER*.

LONDON,
Printed for *A. Roper* at the *Black Boy*, and *R. Basset* over against the *King's Head*, both in *Fleetstreet*; and *W. Turner*, at the *Angel*, at *Lincoln's-Inn* back Gate, 1699.

1936 : 10

THE INTRODUCTION.

HEre is no ſent Dedication to any Illuſtriſſimo for a Protector, who beyond all peradventure knows nothing at all of the matter; and tho' you ſhould flatter him with all the hyperbole's of his Family or Anceſtors, and of his great Endowments and heroick Virtues, yet he would think himſelf not paid in full, for lending of his Name to adorn your Frontiſpiece. The motive of publiſhing this Tract, is not the interceſſion of Friends; for none of 'em ever had the view of any part of it. Neither would I be ſo unfortunate to pleaſe many of the Faculty; for that muſt infallibly draw upon me the Envy and Hatred of Ten times the number, beſides Calumnies and Reflections. The chief inducement proceeds from an inclination to Mankind, to inſtruct them, to preſerve and prolong their Lives; thereby to prevent them from uſing fraudulent Quack Medicines, (which are now become ſo Univerſally vendible among them) or adviſing with ſuch as are wholly Ignorant, and conſequently very bold. I do in no wiſe pretend in theſe following Sheets, to make a Lecture to the Learned; tho' I ſhould think my ſelf ſufficiently rewarded for my pains, if I could arrive to the point of advancing the Art of Phyſick, by offering to them my Obſervations on the pretended and fallacious Methodus medendi, depending upon falſe Indications (received for true) abſtracted from Diſeaſes and their Cauſes, and by propoſing the trials I have made of the beſt and moſt celebrated Remedies, which upon diligent inquiry in my thoughts I could not find to have contributed any thing towards the curing of Diſeaſes, and tho' re-

moved upon the use of 'em, I am certain ought to be ascribed only to time and strenght of Nature, and to be term'd Curing Diseases by Expectation. *Besides, I hope by making so great a number of Doubts, and moving as many Difficulties, to have done some Service to the* Art, *in giving learned Men the occasion to remove them, and to take seriously into their consideration, whether all, or most part, and indeed any part of what the Ancients have transmitted to us concerning Diseases, and their pretended Remedies recited in their Books, and by others afterwards compiled into* Dispensatories, *ought to be received by us with an implicite Faith, so as to doubt less of the truth of them, than of those fine Histories of an* Alexander, *or a* Cæsar.

After all, I must tell you, a Self-interest prevail'd very much with me in the printing of this, which is, that writing an ill hand, and being puzzled sometimes to read it, and the Matter not digested into any sort of order, I might have a more easie recourse to my own Thoughts and Sentiments, being expressed in Characters more legible, and so disposed, that I could then more readily turn to them.

I do also think my self obliged to take notice, that in the following Discourse I have very much receded from those Opinions written by me in former Treatises, whereinto the almost universally received Doctrines of Authors, and my neglect of examining of them rationally and experimentally, had led me, as you may more particularly observe hereafter, for all which Terence *in* Adelphis, Act. v. Sc. iv. *seems to make a sufficient Apology,* viz.

Nunquam ita quisquam bene subducta ratione ad vitam (fuit,
Quin res, ætas, usus semper aliquid apportet novi,
Aliquid moneat: Ut illa, quæ te scire credas, nescias,
Et, quæ tibi putaris prima, in experiundo ut repudies.

The

The Senſe in Engliſh is; That no Man ever made ſo exact a Caculation of matters in his life time, but either the occaſion of things, or length of Years, or Experience, doth offer ſomething that's new; and gives you to underſtand, that what you thought you knew very well, you do not know at all; and cauſes you by making trials to reject that, which before you did moſt approve of. This I muſt own to have found true in my ſelf, and particularly in reference to continual putrid Fevers, which are moſt common in France, *and malignant Fevers moſt frequent in* England, *very few of the former being obſerved here. I did as near I could imitate the generality of Practiſers in curing of them; I adviſed Bleeding as frequently as others, tho' nothing near ſo frequently as now they do, which is a far greater Error in malignant Fevers (as moſt of ours are) than in thoſe, commonly call'd Continual Putrid Fevers; not forgetting cooling Apozems and Juleps, that allay the heat, and abate Thirſt; ſweating Juleps and Powders to drive out the Heat, that is, thoſe nitroſulphureous and bituminous Particles that might occaſion that heat, as I then thought, and not neglecting Gliſtering and Bliſtering; for I did obſerve, that whoever died without the application of Spaniſh Flies, the Vulgar did moſt certainly impute the Cauſe of that Man's death to the ignorance or neglect of the Phyſician, in not applying of the* Tormentors. *Upon the calculation of the whole matter (as* Terence *ſaith) I found by length of years, that* cæteris paribus, *as many as were not phyſically treated, recovered, and in ſome Seaſons many more recovered than thoſe that had been oft Blooded, Cordial'd and Sweated, Glyſter'd and Bliſter'd: Which wrought this Opinion in me, that all the* Hypotheſes *of Fevers, whether ſeemingly true*

or falſe, were of no manner of ſervice, to ground the practical part upon; for even now do what you can, the Fever walks on from the Beginning *through the* Augment *to the* State, *and if the Patient hath not been over-blooded, or prepoſterouſly purged, he may paſs through the* Declination *to a condition of health. This being ſeriouſly obſerved by me, put me upon forming a different* Hypotheſis, *and Indications conformable to it, whereunto the* Indicata, *or Remedies reſponding do evidently and ſenſibly abate the Cauſe and Symptoms, without ſuffering the Fever to run up to a ſtate. I have had very lately occaſion to make obſervation upon a ſort of malign Fever, that was popular about us. They were generally taken with Coughs, Drowſineſs, moveable Joint-pains, commonly termed Rheumatic Pains; ſome did ſpit Blood, and afterwards Matter; they were for the greateſt part free from Drought, their Urin of a good colour with a whitiſh Sediment, the Pulſe flower than uſually in the ſtate of health. They generally ſaid they ayled nothing, they were not ſick, but they had gotten a great Cold, tho' they were ſuddenly reduced to the greateſt weakneſs. Thoſe that upon their own heads, were blooded after the fourth day, or were Blooded more than once, died.* Others *that were blooded ſparingly once within the two firſt days, ſenſibly recovered upon the uſing of an uncommon* Antifebril *Medicine. Another Miſtake I have oft taken notice of imparting, that what is expectorated by Patients properly Conſumptive, by reaſon of an Ulcer in the Wind-pipe, or the* Bronchia *(for it is not frequently obſerved to be in the Lungs) attended with an Hectick Fever, is all* pus, *or a* materia purulenta, *which is not poſſible; for ſhould all that thick glary green-iſh, yellowiſh, and ſometimes whitiſh matter be* pus,

that's

that's expectorated by ſuch, which I have ſeen hath exceeded the meaſure of a quart, and more, in four and twenty hours, it would exceed the quantity of forty or fifty very large external Ulcers, though ſituated near great Veſſels; ſo that I conceive there is only ſome purulent matter mixt with a ſlyme corrupted, and putrefied to an extremity, and therefore that commonly is not only attended with a ſtink, but all their breathing out of their Lungs, and Pores of the ambient Skin, ſtinks, as doth alſo their Victuals, if by chance they happen to vomit them up. Wherefore I do apprehend, that all the Humors in their Veſſels are corrupted and ſtink, and that all their Bowels are tainted: So that the French *have no other word to denominate a* Conſumptive, *than* Pourie, *which ſignifies rotten: Were it only an Ulcer, the Difficulty would not be very extraordinary, that being eaſily cur'd; for we ſee daily, that the Ulcers occaſion'd by a* Pleuriſie, *and a* Peripneumonia, *are oft cured very ſpeedily of themſelves, without adminiſtring any Medicines. To pretend to cure a Confirm'd* Conſumptive, *is equal to make a new Man, new Bowels, and new Humours: It is in the beginning only this Diſeaſe admits of a Cure, and which muſt be perform'd with Remedies very uncommon.*

Before I leave this Subject, I ought to obviate a very conſiderable Objection, viz. *A Stinking Breath, which ſome are affected with during the whole Courſe of their Lives, to a degree, that they are capable to perfume a whole Room, is commonly ſuppoſed to proceed from putrefy'd or rotten Lungs, notwithſtanding it ſeldom or never attended with an Hectick Fever; and as incurable as it is, is not accompany'd with a rotten Cough, nor doth it taint the Bowels, nor infect the whole Maſs with Putrefaction; and therefore an Ul-*

cer

ers in the Lungs, Aſpera Arteria, *and* Bronchia, *cannot import that Danger, nor infect the Bowels and Humours with a Stink and Putrefaction, as the fore-going Diſcourſe ſeems to inſinuate. Toil Difficulty is eaſily remov'd: That ſort of Stinking Breath, which is here inſtanc'd, doth not proceed from the leaſt Putrefaction of the Lungs; for very oft thoſe Perſons ſo affected have very ſound Lungs, breathe well and free, live to a great Age, and digeſt their Victuals very well; which is a ſign alſo that neither the Stomach can be ſuſpected to ſteem up ſuch a laſting ungrateful Fume, tho' it muſt be granted, that a ſtinking Breath may for a time be occaſion'd by Steams, ariſing from a foul Slyme in the Stomach, corrupting there, and relaxing the upper Orifice ſo, as it doth not cloſe ſo exactly as it ought: But this is ſoon cured, by clearing the Stomach by a Vomit, or Purge. You are therefore to apprehend, that the Cauſe of a perennal Stinking Breath in theſe healthful Perſons, is to be imputed to Slyme oufing daily and hourly out of the Glandula of the Throat, and harbour'd in ſome deep ſmall hollowneſs or crevice near the Tonſils, and ſometimes on the back-ſide of the* Uvula, *either towards the Right or Left Tonſil, where being kept long, and conſtantly meeting there with a putrid Slyme that was left there before, doth corrupt and putrefie the Slyme that oufeth thither every Moment: The Breath of the Lungs paſſing by, carrieth thoſe putrid Steems with it, and ſo cauſeth that Stinking Breath, which is but very little amended by ſweet perfum'd Lozenges, chawing of Orange-peel, Spices, or ſweet Confects. The only Palliative Remedy is, to uſe a ſtrong abſterſive penetrating Gargariſm four or five times in a Day, eſpecially in the Morning ſoon after riſing, and at other times after eating and drinking, made of a good quantity of Wormwood-tops, Century-flowers, Orange-peel and Juniper-berries, boil'd in Vinegar, or White-wine, ſharpen'd with Spirit of Sulphur. This, by piercing into that Crevice, or Hollowneſs, and wiping off the putrid Slyme, removes the Cauſe, and renders the Breath very tollerable for a conſiderable Interval, and by chance may in time wholly cure it, tho' commonly it is incurable.*

To conclude; I do wiſh, that what I have publiſh'd in theſe following Papers may be as ſerviceable to others, as I do conceive (if I am not under a Miſtake) they are, and have been to me.

THE

THE VANITIES OF *Philosophy* and *Physick*.

CHAP. I.

Representing some Vanities of common Receipts, Herbs *and* Herbals.

1. THo' all Nations are imbued with various Specifick Qualifications, wherein each differ from the other, yet that of Credulity, or an easie rash and inconsiderate belief may be conceived, to be universal to Mankind, and to which not improbably ought to be imputed the sequel of the most frequent and greatest Errors, Deceits, and Impostures, most Men are daily and hourly plunged in, as the source and spring of all, as may be plainly Evidenced in each of the three subsequent Faculties, I mean Divinity, Law, and Physick. The *Popish*, *Mahometan*,

Sun, *Moon*, and Devil Worshipping Religions, embraced by such innumerable Multitudes, also all Heresies, Schisms, pretended Witchcrafts, Sorceries, and Exorcisms, howsoever erroneous, impoling, and deceitful these all may be censured, flow from no other head or fountain, than an easy inconsiderate belief given to the insinuations of cunning subtil little Priests; And he that gives a precipitant credit to the Language of a Seller of Lands, Houses, or other Merchandizes, doth not rarely repent his rash belief, especially when he adds to his Error, his too easie acceptance of relief, from the doubtful remedies of a vulgar Lawyer: But it is the third Topick beforementioned, is design'd for the chief subject of the present Discourse, which I shall endeavour to explain in its extent.

2. That most of Men do very readily take upon trust any Remedy, or receipt, that is confidently recommended to them, can scarce be contradicted; and their fond passion in the inconsiderate belief of 'em is so great, that without any loss of time, they are to be Registred in their Book of Receipts, handed to them possibly by their Grannam, and *Archive* like to be lock'd up in their Desk, secured in a lock'd Closet, within a lock'd Room. Three such Locks being broke open by a Notorious Thief, Stole thence a Hundred Pounds in Moneys numbered, and a Book of manuscript Receipts finely covered. The party injured condoled the loss of his Remedy-Manuscript to such a degree, that it wholly drowned

ned the loſs of his Money-bag, which he would readily have compounded for the reſtoring of the Book, which the blank paper in it excepted, would have been overvalued at Two-Pence.

3. The next recital coming within my knowledge, will give you a farther taſte of this ſort of fooliſh Credulity. The Servant of a Linnen-Draper had ſo great an Intereſt in her Miſtreſs, as to borrow out of her Husband's Cloſet a Book of ſcribled Receipts, which through a Communicative kindneſs to one of my Maid-Servants, was entruſted with her to be Tranſcribed; but the Maſter daily converſing in his Cloſet, ſoon miſſed what he ſo frequently eyed, and valued above all what was in it; upon a ſtrict enquiry after the matter, his Wife as ſoon qualified his uneaſineſs, by acquainting him where this valuable Treatiſe was to be found, who not long after accoſted my Maid ſeveral days, being delayed for want of an opportunity of Tranſcribing. The perſon being tired by unſatisfactory anſwers, reſolved to diſcloſe to me the cauſe of his ſo frequent Conferences with this Menial of mine; and promiſing to uſe my Authority with her, I did not doubt, but I ſhould oblige him with the return of his Book next Morning at a certain Hour, at which time preciſely he came, when I did not fail to diſcharge my promiſe, in repoſſeſſing him with his Book, which he received from me with all the reſpectful Reverence, that Hands and Knees could expreſs. You will not judge

it improbable, that my Curiosity should lead me to inspect these Papers, which to the best of my Memory contain'd an excellent way to Stew a Calves-Head with Oysters, another to make Fritters, and some other pieces of Cookery; also a Salve for Chilblains, a Plaister for all sort of Swellings, an infallible Drink for the Stone, a most certain Remedy against a Consumption, and all sorts of Coughs of the Lungs, being a Syrup jumbled of most strange Materials. Varieties of other Infallibilities of Remedies equally foolish I pass by, and shall only remark the immensity of this Man's belief, by his Mournful Countenance, whilst his Book of Secrets was absent from him, and to what serenity he was restored upon his reinstatement.

4. Suppose one of these Medicines were to be taken out of this Magazine of Health, and to be applied against a Consumption, Stone, or any thing else, the failure he would most certainly attribute to the want of some of the Ingredients, their too long being gathered, too much or too little being boyled, or to a hundred other Miscarriages, insomuch, that it would not give the least shock to the stability of his belief, which might not be singular in this person, but general in thousands.

5. It would by many be Censured an Usury in a person, that from the Expence of thirty or forty Shillings, in the purchase of a *Gerard*'s Herbal, or such like picture Book, he should expect such an excessive Interest for his

his Money, as the value of knowing the faces and vertues of ſo many hundreds, or rather thouſands of Plants doth amount to: And indeed the Bargain of that Plant-Book would prove extraordinary Cheap, did what is contain'd in the hundredth part of it, anſwer to Truth in matter of Fact, which gives me occaſion to make this Inference; that Herbals are fitter for Gardiners than Phyſicians, in furniſhing the former with a Scheme of Figures of ſo many thouſand Weeds there deſcribed, and conſequently to throw them out of their Manures, as Abſorbers of the juice of the Earth, that ſhould give Nouriſhment to their Eſculents. However, to prevent contradicting the Old Phraſe, *Natura nihil facit fruſtra*, it may not untruly be affirmed, that the generality of Herbs growing in Fields, Meadows, and Hills, Nature ſeemed chiefly deſign'd to beſtow upon Beaſts. It would therefore be an Employment fitter for Boys, that love Rambling and ſantring about Fields, and Hedges, to go upon Simpling, (as our Botaniſts do term it,) than for Men, to make ſuch needleſs, and not unchargeable Journeys, to the remoteſt Hills, and Woods, only to be acquainted with ſome New faces of Plants, and take the Portrait of 'em, to be placed together in ſome bulky Volume, whoſe immenſurable induſtry doth no more than equal thoſe, that have taken the pains to abſtract the Pictures of variety of Beaſts, Fiſhes, Birds, Flies, and other Inſects, in the manner of *Aldrovandus* and his Mimicks, who in

that ſort have paſſed their Lives in doing of nothing.

6. What reſpect is paid to *Hippocrates* and *Galen*, for their Services in Medicine, and to *Geber* or *Paracelſus* in Chimiſtry, *Dioſcorides* may Challenge in *Herbary*, he being by Profeſſion an Old Soldier, and worn out by the Fatigues of Campaigns, with the aſſiſtance of his Crutches and Stumps made a ſhift to Perambulate Woods, Hills, and Dales, in purſuit of Herbs and Weeds, with a deſign to get his Bread, by Experimental Application in the Cure of Diſeaſes, wherein he attained the ſucceſs of *Gypſies*, that by foretelling the ignorant their good or bad luck, ſometimes hit, and ſometimes miſſed. Their caſual hitting gives them Reputation enough, to perſwade people, that their miſſing is occaſioned by their miſunderſtanding the *South-Sayer's* Predictions, or their own forgetfulneſs of what was told them, ſo that many do readily believe theſe *Gypſies* to be never failing Prognoſticators, not unlike *Dioſcorides* his Herbal performances, who by his green Remedies obſerving ſome Diſeaſes diſappearing, made no doubt of aſcribing their Cure to 'em, and as boldly to hand the *Probatums* to ſucceeding Ages, which as confidently without the leaſt ſcruple, even to this day do receive them, not thinking that length of time, change and ſpareneſs of Dyet, alteration of the Air and Seaſon, univerſal and particular evacuations might perform the main part; the Truth of which ſeems by many inſtances to appear to

me.

me. That *Betony*, *Roſemary*, *Sage*, *Lavender*, *Mother of Tyme*, *French Lavender*, *Piony*, *May-Lilly*, *Lime-Tree-Flowers*, and the like, upon the uſe of 'em, by direction of the Learned, for many Days, Weeks, and Months, have failed in the Cure of Head-Aches, Tremblings, Swimmings of the Brain, Convulſions, and other Diſtempers of the Head, can beſt be atteſted by the Adviſers; though it cannot be denied, that ſome of theſe Diſeaſes have gone off in very few, upon the application of the foreſaid Vegetables; but whether to be imputed to the vertue of theſe, may be matter of inquiry: However, hit once and miſs a hundred times, is a ſign of no great infallibility.

7. That a Million of Conſumptives labouring of an ulcerous Diſpoſition of the Lungs, have been fruſtrated by a very long uſe of *Ground-Ivy*, *Maiden-Hair*, *Yſop*, *Scabious*, *Lungwort*, *Coltsfoot*, *Sanicle*, *Golden-Rod*, *Ladies-Mantle*, *Bugle*, and forty more, though uſed in all the forms and ſhapes, is ſufficiently recorded in moſt of the Church-yards of this Iſland.

8. The Stone-grinding and Piſs-driving-Herbs, as *Saxifrage*, *Maiden-Hair*, *Speedwell*, *Horſe-Radiſh*, *Fennil*, *Perſly*, *Broom*, *Grummell*, *Daucus*, *Butchers-Broom*, *Cicers*, *Winter-Cherries*, and the reſt, are not much depended upon by thoſe, that have made trial of 'em for four or five Months ſucceſſively, though now and then one or other, that hath fancied a great relief, doth revive their dying Reputation. Theſe and the

like instances do aptly compare the practice of Physick to a Lottery, where one Fortunate Adventurer saves the sinking credit of that Cheating Mystery, against a hundred blank Miscreants, by being proclaimed such by sound of Trumpet.

9. To *Madder*, and many other Vegetables is ascribed Opening, Stopping, Binding, curing of the Jaundice, removing Obstructions of all sorts, suppressing the *Menstrua*, Looseneſſes, and all sorts of Bleedings, besides many other feats, that are contrary to each other. As for *Amulets* and other Transplanting and wonderful deeds, they are appropriated to abundance of Plants, of which, and several Physick Golden Legends the Herbarists speak wonders, if you can believe them. As for my own particular, beyond forty or fifty Vegetables, tho' I have made trial of hundreds of 'em, I find no great occasion for them, and therefore shall supersede taking any farther notice in this place.

CHAP. II.

Of the insignificancy of the Old and New Philosophy.

1. *Things in* Philosophy *and* Medicine, *which we do not know, are beyond all manner of Comparison more than those things we do know.*

2. *The greatest part of those things in* Medicine, *which we pretend to know, is conjectural, and uncertain.* 3. *Many*

3. *Many, if not moſt of theſe things, which we do peremptorily affirm to be this, or that, to be cauſed by this, or that, or to cauſe and effect this or that, are, or may be proved, to be falſe, or erroneous.*

Theſe Poſitions being only my particular Creed, whereinto the weakneſs of my capacity hath been wrought by thouſands of inſtances, I ſhall undertake to offer only ſome few, the ſhortneſs of my purpoſe no otherwiſe permitting.

1. Natural Philoſophy is propounded under Two Heads, *viz. Phyſica generalis, & ſpecialis*; that is to ſay, *General Natural Philoſophy*, and *particular*. The former expounds in general terms, what a Natural Body is, namely, That it is a thing extended, moved, or quiet, figured, and ſo or ſo placed, Scituated, or poſited. *Corpus Naturale eſt res quanta, mota, vel quieta, figurata, & taliter, vel taliter poſita.*

2. What is all this but *Metaphyſicks*, namely, general Notions drawn from all particular Bodies? A Natural Body doth conſiſt of Quantity, that is, extenſion into length, breadth, and depth, menſurability, or diviſibility into Particles, (it's much as one in the Original,) of motion, or reſt, of figure, and poſition or ſcituation. Upon theſe five Topicks follows a very long Cant, and of little more ſignification than the Predicaments, or *Materia*, *Forma*, and *Privatio*. But its a wonder to my crude Thoughts, Number was left our, ſince there is no compleat Natural Body, but doth conſiſt of a definite number of Particles; however

ever it may be presumed, that Number is comprehended under Extension, sc. *Quantitas discreta.*

3. The *Physica Specialis* depends upon the application of the forementioned, to every *Subgenus*, *Species*, and particular Body, and by that you are to know, what any particular Body is, of what it doth consist, and how each is differenced from the other.

4. What sound this modern Science of Bodies makes upon an anvil, the following recital will inform you. A *Smith* being very sedulous in the management of his hot Iron, found himself much interrupted by the importunities of a begging Scholar, inforcing his Argument for an Alms of a small piece, with an Harangue of his Merits, arising from his being a *Master of Arts*, of I know not how many years standing, a *Doctor in Philosophy*, embroider'd with *Latin*, *Greek*, *Hebrew*, and abundance of other Giblets of Learning. The *Smith* to free himself of all this impertinence, asks, what that red hot thing was, he held in his Tongues, what it was made of, and what difference there was between that and Copper; to which the Beggar replied, it was Iron, a Mettal, or a Business dug out of the Ground, that will melt, and can be hammer'd; and so is Copper, infers the *Smith*; *Ergo*, Copper is Iron. No Master, saith the Medicant, there is a vast discrepancy between them in their insensible particles, which are of different insensible extensions, insensible figures, insensible positions, insensible motions, and insensible

ble immobilities. *Ergo*, then ſaith the black opponent, no two Bodies can be alike, two drops of Milk, of Water, of Wine, or any liquid may be inſenſibly different. Thou art a moſt inſenſible Philoſopher, a Man is not a Horſe, a Sow is not an Elephant, Wood is not Cheeſe, and ſo of all others, becauſe their Particles are of various inſenſible figures, poſitions, *&c.* The moſt ſubtil Particles of the Forge fire, and the inſenſibilities of this *Arts Maſter*, had by this time fermented *Vulcan* into a torrent of Maledictions, crying out, you are a Cheat, to defraud the impotent poor of what, they may juſtly crave from the Charity of all Men; a lazy, ſlothful, unthankful Knave, enjoying the fruits of thy laborious Mother Earth, without returning the gratitude of a days Plowing, or Dunging, which you are made for; an incorrigible ſturdy Beggar; ſee how the ſleeves of your totterdemalion Gown are cram'd from the Elbow to the Ground with Pie-cruſt, and pieces of Roaſt-Beef, and what's here in the bottom? a couple of Silver Spoons, two laced Hankerchiefs wet, as if newly ſtolen off of ſome Hedge. You pilfering Dog, diſrobe that Friar *Bacon*'s Livery, off with your ſquare pancake Bonnet, and put on that Old Coat of mine there, and this Old Hat; blow the Bellows, and I will teach you an Art beyond all your Maſterſhips idle foppiſh Arts, and Sciences, that ſhall get you an honeſt Livelihood, or elſe away to the Houſe of Correction, that will ſoon drive out your inſenſible Particles, and make you ſenſible of what it is to Beg, Chear, Pilfer, and Steal.

5. To

5. To what degree of ſatisfaction this Globular ſort of Philoſophy, pretending by its inſenſibilities to explicate the principles, cauſes, and affections of natural Bodies, doth ſuperate the old pedantick Sophiſtry of matter, form, privation, and the four Elements, together with their aſſigning the effects of natural Bodies to occult qualities, may juſtly be inquired into, ſince the anſwer is equal, that ſuch or ſuch things are cauſed by occult qualities, or by inſenſible Particles, of inſenſible blind figures, and unknown poſitions. However, both the Globular and Peripatetick Philoſophy afford matter ſufficient to Chatter, Cavil, and trifle away the flower of a Man's time, as if deſign'd only for an Employment to divert from Idleneſs and Debauchery, not unlike ſending Children to School, to prevent them from Carts and Coaches in the Streets or High-ways. Thoſe do properly enough come within the ſaying of *Saluſt. Vitam ſilentio veluti pecora tranſeunt*; eſpecially when continuing in an Univerſity, and poſſibly in a Fellowſhip, till their Bodies are grown ruſty with Sloth and Lazineſs, and their Heads turn'd mouldy with grey Hairs, whoſe Studies indeed ought to have been determined in ſeven Years, were it only to quicken their Induſtry, and make way for other indigent Students to ſucceed them. A *Peacock* in all his gawdy Plumage is a Creature leſs ſtately and proud, than a *Maſter of Arts* treading to the Schools in his Formalities; and though Homage be paid him in his way thither by Undergraduates

ates, and *Bachelerios*, his refined Manners will ſcarce allow his Maſterſhip to touch the angle of his Bonnet. *Clariſſime Magiſter quare rides? Rideo, quia Magiſter ſum.*

CHAP. III.

Of the Digeſtion and Indigeſtion in the Stomach, and the vanity of the cauſe thereof.

IT might be reaſonably expected from the Tradition of ſo many Ages, and the Studies of ſix or twelve Months of ſo many *Maſters of Arts* of ſeven Years ſtanding or walking, before they aſſume the tufted Gown, that *Galen's* Theory would be render'd as *Diaphanous*, and demonſtrable as *Euclid*; yet to my dimme *Oculation*, Many, if not moſt of their Notions, ſeem ſtill to be plunged in a dark *Chaos*; for as obvious as the Digeſtion of the Food in the Stomach may be, though it be the firſt Operation in the Body of Man, and therefore ought to be better underſtood, yet to me ſeems now, nothing can be worſe explained, than by aſſerting the diſſolution into Chyle, to be performed by the natural and adventitious heat of the Stomach, brought to it by the Arteries and warm coverings of the Liver, Spleen, and other adjacents. A *Shark*, *Sea-Wolf*, and other Fiſh, if Credit may be given to all thoſe Writers of *India* Voyages have been found to contain in their Bellies a whole Man,

Man, being thrown overboard, with all his Cloaths upon him, great Joynts of ſtinking Beef, with their huge Ox Bones in them, and Carcaſſes of Sheep with their Wool on their Backs, all which were diſcerned almoſt digeſted into a thick ſlimy Juice, without obſerving any ſenſible heat, but rather coldneſs. The like may in proportion be inſtanced in a freſh-water *Share*, I mean the *Pike*, whoſe vigour in digeſting an Ox paunch, and other Garbage, likewiſe Boney Fiſh of conſiderable bigneſs, without any ſenſible heat in their Bowels, or any ſteaming warmth, is an Argument, that inforceth the former. The heat in the Maws of *Poultrey*, which is inferiour to that of the Stomach of a Man, cannot be conceived in any wiſe proportionable, to diſſolve the husks of *Barley* or *Oats*, and eſpecially ſmall pebbles, which the extremity of Fire may melt, but not diſſolve, and yet the heat of the Stomach of a Horſe, though much more intenſe, doth make much leſs impreſſion upon Grain, which commonly ſlip away untouch'd with their Dung. It hath likewiſe been decided by common obſervation, that thoſe who heat their Stomach at Meals with Wine, or ſoon after with Brandy, have a more difficult Digeſtion than others, who moiſten their Victuals with ſmall Beer, Wine diluted with Water, or only Water, as is uſual to three fourths of the Univerſe.

2. Neither am I convinced, that thoſe who aſcribe the Energy of Concoction to an Acid Ferment, have in any wiſe hit their Mark; for

for conſidering fermentation imports properly an inſenſible, and in ſome things a ſenſible ſmall ebullition or ſimpering of any natural, or artificial, mixt, or compound liquid, ſoft, or conſiſtent Body, which by rarefaction, or widening and opening the cloſe parts, doth let out, or expel ſuch particles, or bodies, that are Heterogeneous, whereby a depuration of the ſaid mixt body is attained: And if this rarefaction, or widening, and multiplying of the pores of the Body, be protracted to too long a continuance, or performed with too great violence, the moſt ſubtil particles of that body, which are the chief conſtituents of it, are forced, or let out together with the Heterogeneous, whereupon a diſſolution, putrefaction and corruption of the whole mixture muſt neceſſarily enſue, as appears in the fermentation of Wine, Beer, Cider, *&c.* which being rais'd too high, or continued too long, doth moſt certainly convert them into Vineger. Dow, by yiſt or levain, is huft up (or in the common phraſe doth riſe) or rarefied, that is, opened, or widened in all its pores, and oft multiplied, whereby the moſt ſubtil particles, or matter of the fire (being the heat of the Oven) is let in, which together with the conſtituent moſt ſubtil particles of the Dow, do expel the nitrous, and other heterogeneous ſlymy parts, which otherwiſe would prove very offenſive to the Stomach, and in ſome be render'd indigeſtible. Now if the Dow continue too long in riſing, or riſe too faſt, it ſoon falls, and is apt to turn ſowr, and being

ing then put into the Oven, can never be well baked, and doth in a ſhort time turn mouldy.

3. To ſaythen, that Bones, Griſſels, or any other hard matter, is rarefying in a Dog's ſtomach, meaning thereby fermenting, and conſequently digeſting, to me ſeems a very improper way of ſpeaking; for fermentation doth in my Opinion ever follow Solution, in order to depurate and render homogeneous, what is diſſolved; how then can thoſe Bones be ſaid to be fermenting before they are diſſolved and digeſted?

4. It is to the Spittle many Phyſicians of good Fame do attribute the chief, or rather ſole power of diſſolving the Victuals into Chyle, by raiſing a Fermentation in the Meat and Drink, that's ſwallowed down into the Stomach; for being chawed, cruſh'd, rowl'd, and turn'd about in the Mouth, it's mixed with ſuch a proportion of Spittle, which by its Spirits and ſalive Particles, aſſiſted ſomewhat by the native and ambient heat of the Stomach, penetrating through the pores of the Victuals, raiſes a ſort of a ſmall Ebullition, whereby they are diſſolved. But if you conſider the nature and uſe of Spittle, probably this matter may appear otherwiſe. Spittle cannot properly be called an Excrement, which is of no uſe, and ought to be thrown out and expelled; but a Recrement, which is of uſe and ought not to be expelled, unleſs it be abounding, and after it hath performed what its intended for. *Horſes*, *Cows*, and other

Animals

Animals have their Mouths and Throat always moiſtned with Spittle, but which is ſeldom or never expelled by them by ſpuration, as very oft it is by the Humane kind, when its become ſuperfluous; which is an Argument, its no Excrement. The uſe of it to me appears, to moiſten the ſeveral parts of the Mouth, Gullet, and Windpipe, and to keep them conſtantly glib, ſmooth, and ſoft; for otherwiſe the Tongue and Jaws by their frequent motion, and the ſteems that continually paſs out of the Lungs in the expiration, would render thoſe parts ſo dry, ſtiff, rough, and unpliable, that they would become uſeleſs. The Windpipe would be ſo corrugated and contracted, that it would put a ſtop to the reſpiration; the Gullet would likewiſe through want of Spittle ſuffer ſuch a ſtreightning and roughneſs, that it would be utterly incapable to give paſſage to the Victuals. Touching the nature of Spittle, it is in no wiſe different from *Lympha*, which is contained in other *Lymphæ-ducts*, the *Ductus Salivales* being no other, and as long as it continues in the ſaid *Ductus*, its much fuller of volatile ſaline Spirits, which renders it limpid, fluid, and thin; but being come to the Mouth and the other parts, out of the ſaid *Ductus*, thoſe volatile ſaline Spirits do ſoon evaporate, and fly away, whereby the Spittle becomes thick, mucilaginous, and oft frothy, by the admixture of extraneous Air, and other ſlimy Particles, it meets about the Mouth and Throat. So that if Spittle be of this nature, it muſt rather hin-

der fermentation, and conſequently the pretended ſolution into Chyle, which that it doth, is manifeſt in thoſe Melancholians, that are commonly termed Spitters, who generally have a very bad Digeſtion. But ſuppoſe a Man that abounds with Spittle, ſhould ſpit a quantity of it warm out of his Mouth into a warm bolt head hermetically cloſed, containing a ſmall bit of Meat, that had been well grinded in a warm Mortar, and then this mixture being put into a warm ſand Bath, do you believe, here would happen either a fermentation, ebullition, or ſolution into Chyle, though it were to continue there ſix Weeks? Or, ſuppoſe a Man ſhould ſwallow ſeveral great lumps of Fleſh without chawing of it, or mixing it with his Spittle, do you not think, he would digeſt it into a Chyle, though it might take up ſome longer time, than if his Meat was chawed? What Spittle doth a *Shark* or *Pike* mix with thoſe great pieces of Fleſh and Bones, which they ſwallow without chawing, and yet digeſt them ſooner, than any other Creature could, as they are in the Water?

4. That the *Lympha* in all the *Lymphæ-ducts*, (and the Spittle alſo though more ſparingly) is perfuſed with ſome remaining proportion of volatile ſaline (that is Animal) Spirits, appears to me by the ſimilitude of Argument, for eſtabliſhing the circulation of the Blood out of the Arteries into the Veins, and thence into the Arteries again. The chief motive to me being, that the Heart throwing at every

Pulſation

Pulſation ſuch proportions of Blood into the Arteries, theſe muſt of neceſſity ſwell to an extremity and burſt, were there not other Veſſels, namely, the Veins, ready to receive and unload the Arteries; as for the ſwelling of the Arteries on the ſide towards the Trunc, and of the Veins towards the extremities of the Body, upon a Ligature made on any of the Joynts; or the Arterial Blood upon Arteriotomy flowing from the Trunc, and the Venal Blood upon Phlebotomy flowing towards the Trunc, would ſcarce be perſuaſive enough to me to receive that Doctrine, ſince other Reaſons might be given for thoſe different Intumeſcencies upon a Ligature, or the different iſſuing out of the Blood out of the Arteries and Veins. In like manner I do ſuppoſe, that the *Nervous Lympha*, which is the Vehicle, and containing Liquor of the Animal Spirits, is always flowing or dripping from the Brain, and *Medulla Spinalis* to moſt parts of the Body through the Nerves; and cannot be ſuppoſed to return back again naturally, which therefore muſt of neceſſity extreamly ſwell, and ſtiffen the Nerves, unleſs received and disburden'd by ſome other Veſſels, which in all probability muſt be *Lymphæ-ducts*, containing in ſubſtance, tenuity, clearneſs, penetrative vertue, and other qualities, a *Lympha* not unlike the gleet, that diſtills from a wounded nerve. Moreover, conſidering the valves in the ſaid *Lymphæ-ducts*, opening towards the Trunc, and ſhutting towards the extremities, doth add to the apparency of the

forementioned ſuppoſition, implying there is a circulation of the Animal Spirits and *Lympha*. The foreſaid *Lympha* being received by the *Lymphæ-ducts*, muſt neceſſarily be much impoveriſh'd in its volatile ſaline Spirits, and conſequently have loſt its power of apporting of motion and ſenſe, though otherwiſe of very great uſe.

5. Neither can I conceive, that the Stomach is capable to contain any Acid juice powerful enough to diſſolve Bones, Griſtels, Sinews, Skin, and all ſorts of Fleſh without hurt, and danger of perforating its membranes, being much ſofter and eaſier to be diſſolved, than Bones or Sinews. If you pour the ſtrongeſt Vineger, or *Aqua fortis*, upon thoſe edibles beforementioned, and ſet them over any degree of Fire in a Veſſel, ſtop'd as cloſe as if Hermetically Sealed, for the ſpace of ten or twelve Hours, you will ſcarce find any Solution, or at leaſt not comparable, to what a ſound Stomach performs in two or three Hours. Moreover, where any perſon by ſower Belches perceives his Stomach to be charged with a ſower juice, his Victuals will ſcarce be digeſted, or diſſolved into a good Chyle, but into that ſort of ſlime, which Phyſicians term *Cruditas acida*. And I have frequently obſerved, that many upon Drinking ſower Beer, or eager Wines, or uſing ſower Sauces to their Victuals, have not only undergone a very laborious and painful digeſtion, but oft-times been forced to throw up their whole Cargo.

6. That

6. The Stomach doth ſometimes receive ſuch ſorts of aliment, as Pudding, Pancake, Cuſtard, Tanſie, Minced-Pie, Plum-Broath, Plum-Cakes, and the like, which in moſt perſons will ferment, and be rarefied to a degree, that will huff up, diſtend, and ſwell not only the region of the Stomach and Hypochonders, but alſo their whole Belly, to an extenſion and uneaſineſs, that will oblige them to unbutton, and widen their waſteband. Thoſe recited, and the like edibles, containing a fermentative ſpirit in them, ſeldom fail in fermenting, during which, as it ſuſpends, or at leaſt retards the Concoction, (notwithſtanding they ſeem matters ſo eaſily digeſtible, and incomparatively leſs difficult than Beef, Pork, *&c.*) yet the ſolution cannot, or is ſeldom perform'd with vigour, until the foreſaid fermentation ceaſes, which is perceived by the ſubſiding and relaxing of their drum bellies. Hence it is, that many do find, they cannot digeſt ſo eaſily upon drinking bitter or ſower Small-beer, or ſtrong Ale, Beer, or Wine, as a ſmall aliſh ſmooth Beer, Water, or Wine and Water, becauſe the former contain ſuch a large proportion of fermentative ſpirits. And it is upon the ſame conſideration, that new Drink not being ſufficiently cleared of its yiſt, and other feculencies, proves ſo offenſive to digeſtion.

7. Since I can in no wiſe apprehend the diſſolution of Victuals in the Stomach to be cauſed by heat, fermentation, or any cutting corroding acid juice, no more than Gold,

which the extremity of heat will melt, and not diſſolve, nor will a ſtrong corroding *Aqua Fortis* touch it, yet a ſmall proportion of fluid *Mercury*, (which in that form hath no manner of a corroſive ſharpneſs in it,) with the aſſiſtance of a very little warmth, doth in a ſhort interval of time very expeditiouſly and potently, by its moſt ſubtil particles inſinuating into its pores, though more cloſe than in any body whatſoever beſides its ſelf, tare it aſunder, diſſolve, and divide it into the minuteſt particles. In the ſame manner I do conceive, that all ſorts of Victuals, be they hard or ſoft, are as eaſily and readily digeſted in ſtrong and ſound Conſtitutions, by the moſt ſubtil ſaline particles of the Body, (which are the Animal ſpirits) ſteaming in clouds out of thoſe large Nerves of the ſixth pair, that are inſerted into the Stomach, and their numerous branches that are diſſeminated through its tunics, which forcing into the pores of the alimentary ſubſtances, tare them aſunder, divide, and diſſolve them into the minuteſt particuls, and being mixt with the moiſture of your Drink, are converted into that juice we call Chyle, Hereunto the warmth of the Stomach derived from the Arteries, and cirrounding Bowels, is very aſſiſtent, though it hath been oft obſerved, that ſome whoſe Stomach hath been commonly felt very cold by themſelves, yet nevertheleſs had a very potent digeſtive faculty, that would ſubdue the hardeſt and raweſt of meats.

8. Now

8. Now when the inward coat of the Stomach (*Tunica rugoſa*) is cover'd with too much ſlime, (for it is neceſſary it ſhould be cover'd with a little, to defend it from the ſharpneſs and roughneſs of all ſorts of Victuals it receives) ſo as to ſtop and plaiſter up the pores of the Nerves, whereby the foreſaid moſt ſubtile ſaline Particles are in ſome propotion hindred from flying out, the digeſtion becomes ſlow, laborious, painful, and difficult, confecting a ſlimy chyle, which in proceſs of time doth turn into many ſorts of Diſeaſes.

9. Of thoſe that drink thick, auſtere, or adſtringent Wines at, or ſoon after Meales, or cloſe their repaſts with Quince-Marmelade, Cheſnuts, Almonds, or the like, I have experimentally found, that in many, to whom either the leſſning the uſe, or wholly weaning themſelves from thoſe Things, hath been adviſed, their digeſtion hath been ſoon reduced to its former Vigour, which before, by the continual cloſing of the Pores of the Stomach-Nerves, was exceedingly debilitated, by the foreſaid cloging, and adſtringent things.

10. It is likewiſe as conſonant to experience, that thoſe who uſually drink any Wines, not being diluted with Water, or that commonly conclude their Dinners or Suppers with Banquets of Sweet-meats, Cuſtards, Cheſcakes, Creams, and Gelies, do weaken, and in time deſtroy their Concoction, ſo as few of them are found to be long livers; becauſe thoſe before-mentioned materials containing a fermen-

tative Juyce, by raiſing a Fermentation, do extreamly interrupt and impede the diſſolution of Aliments in their Stomachs. Thoſe Fermentations in the Stomach, upon Fermentative Edibles, are frequently cauſes, that produce thoſe flushings in the Face ſoon after Meals, and at other times in many Women, and ſome Men that have weak Digeſtions, and contain ſomething in their Stomachs that is Fermentable, againſt which drinking of Water, or Water mixt with very little Wine, hath oft proved an effectual remedy.

11. Some that have for ſeveral Years been afflicted after Meals with pain and diſturbances in their Heads, drowſineſs, uneaſineſs in their Limbs, palpitations, faintneſſes, belches, huffings up, and tenſions in their Hypochonders, and Bellies, have been totally cured of all their turbulent Symptoms, by throwing off all Malt-drinks, and Wine, and gradually uſing themſelves to drink Water, when all other remedies were ſo far from giving them relief, that they rather aggravated their complaints. But what is more, it hath been obſerved, that Chronical-Coughs of many Years continuance, have been not only removed, but perfectly cured, by exchanging of Malt-drinks and Wine into Water, or into Water refreſh'd with a little Wine. And thoſe that have travell'd through *Germany*, and the *Low-Countries*, might have obſerved, that the ſtrongeſt and healthfuleſt Bodies are found among the Boars, who for their ordinary Drink are ſcarce acquainted with any thing but

but Whey, or clear Water, which contributing ſo much to perfection of digeſtion, may very reaſonably be eſteemed the true cauſe of their Health, Vigour, and long Life. Theſe and many more like inſtances do force this conceſſion from me, that the choice of Drinks is of greater importance than of Edibles. When Fermentative Drinks, as ſtrong Beer, and Wine ſhall diſturb and retard Digeſtion, and cold Water which ſuppreſſes Fermentations (as appears in many Hyſteric Women, that by drinking a Glaſs of fair Water, do in a moment turn off a fit) ſhall in many promote and enliven Digeſtion, how can it then be thought, that Digeſtion is cauſed by the heat of the Stomach, or by Fermentation?

12. Though drinking Water hath on ſeveral occaſions proved ſucceſsful to admiration, yet particular regard muſt be had to the Climate, ſeaſon of the Year, Age, Sex, Cuſtom, and other Circumſtances; for ſhould drinking Water be recommended to one, who from his Infancy hath been uſed to ſmall Beer, and living in a Northern cold Climate, in a rough friezing ſeaſon, and of a tender Conſtitution, very unhappy conſequences muſt be expected from ſuch unadviſedneſs. Wherefore, where change of Drink ſhall be judged neceſſary, from the continual uſe of ſtrong Beer, or Wine, you may deſcend to ſmall Beer, Barley-Water, clarified Whey, a weak Mead, thin Grewel, or the like.

CHAP.

CHAP. IV.

Of the passing of the Chyle into the Guts, and its depuration there.

FRom what is here incidently discourſed, I return to a farther explication of the Digeſture of the Stomach, where the Victuals being diſſolved, and by continuance of Concoction ſmoothed, and brought to an equation, the Chyle doth then require depuration, which is a ſeparation of the thiner and finer parts from the groſer and feculent, by a Fermentative juyce, which I ſuppoſe to be an Acid, joyn'd to igneous Spirits, by an *intermedium* of ſome glutinous emplaſtic Particles, as may be diſcovered in Yeſt, or Levain. This Fermentation (I will only ſuppoſe) happens at the cloſe of the Digeſtion, and begins to rarefie and huff up the Chyle in the Stomach, whereby the lighter and thiner parts become riſing and ſwelling, and gradually work over the *Pylorus* into the ſmall Guts, the Stomach in the ſame proportion contracting it ſelf into a leſſer and ſhallower compaſs, as it is emptying and growing leſs full, and diſtended, by which means the trajection of the Chyle is facilitated, until there is nothing left, but a groſs and feculent acid juyce, ſerving to aſſiſt as a diſſolvent to digeſt what may remain more difficult, be it ſome griſly

or

or ſinewy, or other tough hard part of the Victuals, Pye-cruſt, or any thing elſe that is more difficult to digeſt, than what is already wrought over the *Pylorus* into the ſmall Guts; which being performed, the ſame acid juyce by its ſharpneſs pricks and ſtimulates the Fibres of the Stomach, (contracting it ſelf into a very narrow Volumn) throws that alſo, together with what it hath diſſolved, over the *Pylorus*. Whence I do give my ſelf a probable reaſon, why the latter part of the digeſtion is always acid, and why at that time we are ſubject to ſour belches, and how it happens, that the fulneſs and diſtention of the Stomach, which moſt are ſenſible of at the end of their Meals, doth gradually leſſen, and as ſoon as the ſour appears is quite allay'd, and the digeſtion finiſh'd. And if I attribute not too much to fancy, I do obſerve, that many Perſons towards the end of Concoction, do perceive an uneaſineſs of heat all over, eſpecially in their Faces, extremities of their Hands and Feet, but particularly thoſe that are weakly, as Hypochondriacks and Hyſtericks, who about that time, and a good while after, are ſubject to have fluſhings in their Faces, and their ſymptoms (as faintneſſes, palpitations, roaring Winds, *&c.*) ſet into motion.

2. Upon the dripping of the Chyle into the ſmall Guts, the Fermentation is conſiderably augmented, by the meeting with the excrementitious Juices from the Glanduls of the *Pancreas*, and *Meſentery*, mixt with Gaul from the biliary Veſſels, whereby the Chyle is wholly

wholly depurated of all its feculencies, which being ſeparated, are term'd excrements of the Belly. That there is ſuch a fermentation in the Guts, appears by the tenſion and intumeſcence of the Belly, in ſome more, in others leſs, which may be perceived two, three, or four Hours after Meals, according to the expedition of their digeſtion, ſeparation, and ſubſequent fermentation.

3. As I am not very flexible to recede from the general opinion of the Antients and Moderns, importing, that the firſt Concoction is performed, either by vertue of the heat of the Stomach, or by force of Fermentation, as it is aſſerted by moſt of the learned, that were cotemporaries with the famous Dr. *Willis*, and others that do ſucceed him: Neither am I willing to be thought ſo criminal, as to be contumatiouſly guilty of Hereſie in Phyſick, yet its pardonable, if not allowable, to be Shiſmatical in ones proper opinion, which in all Mankind is free, and not to be compelled; and therefore I do declare, that nothing but late experiments of no ſmall number, do induce me to retract my former ſentiments of this, and many other matters in Medicines, as firmly believing, what I have expreſſed concerning the firſt Concoction, and Fermentation, as that the Sun is the cauſe of Day-light; though at the ſame time its very poſſible for me to be under a miſtake. But whether all this be really true, or only in appearance, I am thence provided with the ſolutions of hundred of difficulties, offering themſelves

ſelves on thoſe ſubjects, and the full and plain diſcovery of the cauſes of many, if not moſt Diſeaſes, and what is beyond all, not unſuccesfully conducted in the practical part, which to me is a ſatisfaction beyond what I have met with, either in converſing with Printed Authors, or with Men reputed very learned and experienced in the Faculty.

4. Upon the well beginning depends the well finiſhing and compleating, the Stomach being the beginning of the whole Body, it is from the true Knowledge of its fabrick, Conſtitution, Action, or Operation, the knowledge of the Conſtitution of all the Bowels, their Actions, and Operations of the whole Animal is derived. The Stomach is the only and true tuning part of the whole Body, which being well or ill tuned, cauſeth a Harmony, or Diſcord of all the Bowels. The Stomach being ſtrong and vigorous, performing its Office, or Action, and Operation in perfection, renders the Body Strong, Healthful, and long Lived; but in proportion, as it is defective in any part of its Office, Diſeaſes in it ſelf, and all other parts of the Body are engender'd, anſwerable to the degree and quality of its defect, and to the dependency all the Bowels have on it; for being the Laboratory of the whole, whatever is ill prepared here, cannot be mended afterwards, by any of the ſucceeding Bowels, the Chyle being vitious or corrupted, can never be converted into good Blood, nor that into good Animal ſpirits, no more than you can make good Butter

ter or Cheese out of sower or corrupted Milk. And as most, if not all internal Diseases, (Endemic and Epidemic excepted,) are Originally produced in the Stomach, they are likewise to be cured by the Stomach, internal Remedies exerting their first and stronger force upon it, the vertues whereof it afterwards transmits to the part Diseased. Neither is it to any purpose, to pretend to cure any internal Disease, without first of all having put the Stomach into good order, which done, most Diseases are ready to go off of themselves.

5. The Stomach bears an adequate Analogy to the root of a Tree, and may properly enough be called the root of a Man; for as the root of a Tree is the beginning of it, receives or draws the juice of the Earth, to prepare and convert it into Food for the Trunc, and all the Branches, and being well digested, transmits it to all the parts; in like manner, when the Tree is observed not to be thriving, or the Branches to be decaying, changing of colour, withering, or dying, where do they look for the cause, but at the root of the Tree? Even so is it with the nourishing of the parts of the Body, and the Diseases they are subject unto, in relation to the Stomach.

CHAP.

CHAP. V.

Describing Medicines to preserve Health, and their Preparations.

BY the deduction from the preceding Discourse, my Opinion perswades me, that the weakness of the Stomach, and its faintly performing its Office, is only occasioned by the debility of the Stomach Nerves, and its numerous branches, by being plaister'd up by too much Fleam, gross acid dregs, indigestible Meats, or offensive Drinks, or other matter admitted into the Stomach, which by lodging there too long, assume a corroding Quality; or by too much heat, and too little moisture, are converted into a nidorous crudity. This supposed, I do believe, and have experimentally observed, that all those Corroboratives of the Stomach, whose vertue is commonly asserted, to consist in a gentle restrictive and warming Quality, whereby those slimy Humors are more firmly cemented, such as *Aromaticum Rosatum*, *Caryophyllatum*, Cinnamon-water, those hot spicy Brandy-waters, a red Tincture of Roses, Methridate, Treacle, all those Compound Electuaries framed of heating Conserves, Condits, and Peptick Pouders, are so far from contributing the least strength to the Stomach, that rather a contrary effect hath ensued, and being long continued, do carry danger with them. The only

only means I have hitherto found to ſtrengthen the Stomach, are proper abſterſive Medicines, gently wiping off thoſe clammy ſubſtances from the tunics of the Stomach, and the terminations of the Nervous branches, and among theſe I have not yet detected any thing, equal to a good *Elixir Proprietatis*, well prepared by a long Digeſtion in a Sand-bath, the proportion of the Ingredients being ſomewhat altered from the common, and ſomething alſo ſubſtituted in place of the Myrrh: A drop of this ſhall exceed a pound of Peptick Pouders, Electuaries, and other ſop Stomachicks. Do only keep your Stomach clean, you will certainly preſerve its Strength, and prevent moſt Diſeaſes.

2. It is not to be underſtood, where a heap or weight of crudities is accumulated, ſo gently abſterging a Remedy can have a power to diſengage the Stomach, no more than a wet Mop can be ſuppoſed to rid a Room of a heap of Rubbiſh, in which caſe ſomething more ſtimulating is required, that may be uſed in all Seaſons of the Year, be it ſultry or friezing, without the inconvenience of confinement to Diet, or warmth of the Air, and without offence to the Stomach, or putting the Body into any diſorder, to which purpoſes, the Pill I here now deſcribe, I have Experimentally found to be effectually anſwering in moſt reſpects.

3. Take one Ounce of the cleareſt ſhining *Aloes*, which at the *Druggiſts* will coſt about a Groat, or ſometimes Six-pence an Ounce, which

this being free from any conſiderable droſs will not require any depuration. Pouder it in a Mortar, covered over with a brown Paper, having a hole in the middle for a paſſage to the Peſtil, to prevent the little pieces of the *Aloes* from leaping up, while you are in the beginning of your pounding; For afterwards the paper may be removed. Obſerve to anoint thinly the bottom of the Mortar and Peſtil, with a little *Florence* Oyl, to keep it from ſticking to the bottom. When its reduced to a groſs Pouder, by grinding it with the Peſtil you muſt bring it to a ſmooth fineneſs. Put the Pouder into a ſmall glazed flat-bottom'd earthen Pan, that will contain about half a pint, pouring upon it about a quarter of a pint of fair water, wherein hath been diſſolved two drams of *Spaniſh* juice of Liquoriſh, which is done by ſlicing it very ſmall, and ſetting the water in a porringer over a gentle heat; place this ſmall earthen pan into one ſomewhat bigger, having ſand in the bottom to the height of an inch, and afterwards filling it up to the brim. Set them over two piles of bricks, of three or four bricks high, laid flat. The piles muſt ſtand at ſuch a diſtance, that they may reach the edges of the bigger pan, to ſupport it. Then make a moderate fire of Charcoal under it, to heat the ſand, to cauſe the ſuperfluous moiſture to be evaporated, until the *Aloes* is brought to the thickneſs of Honey. Or you may by dropping two or three drops on the back ſide of a plate to cool, make trial, whe-

ther it be reduced to the consistency of Dow; for if it be overdone, the mass being render'd brickly, will not only lose most of its virtue, but also its aptness of being framed into Pills; and if itbe not evaporated enough, it will be sticky, and not apt to be brought to a Mass.

4. The lesser pan being taken off, when the evaporation is sufficient, before its quite cold, you must with a *Spatula*, or slice, take out the Mass, and between your Fingers, being a little anointed with *Florence* Oyl, or Oyl of *Sweet Almonds*, to prevent the sticking, rowl it into a round ball, which you may keep in a Sheep's Bladder, being likewise thinly wetted over on the inside with the same Oyl, for many Months,if necessary, without any great impair of its vertue.

5. A small piece of this Mass being form'd into six, seven, eight, or nine little Pills, of the bigness of a Pepper-corn, is a Dose sufficient to give two or three motions, according to the number of Pills, and the loose or Costive Constitution of him that takes them. The safety of this Medicine adds much to its Character, since the taking of one Pill or two more or less, imports as little hazard, as the taking it very oft, or in any kind of Season, be it hot or cold, unless your Body be subject to a Looseness, or the Hemorrhoids, or your Constitution be thin, hot, and dry.

6. By the addition of the juice of Liquorish the *Aloes* is design'd to be obtused in its too pungitive quality, whereby its apt to raise the Piles,

Piles, and becomes ſomewhat leſs precipitating, and conſequently hindered from leſſening expectoration, which in this Climate is ſo neceſſary in Coughs and Phthyſicks.

7. The ſame correction may alſo be attained, by diſſolving the ſame proportion of clean *Aloes*, in half a pint of juice expreſſed from the contuſion of an Ounce of *Bugloſs*, or *Borrage* Roots, or a large handful of their Leaves, and ſtirring half a pint of warm water with them in the bruiſing, and clarified by ſubſidence, in letting it ſtand in a Sellar for a day or two, and pouring it off the Fæces or Dregs in the bottom. This evaporated in the ſame manner will produce a Maſs, almoſt equal in goodneſs with the former.

8. I cannot hitherto obſerve, that the uſe of theſe Pills, though frequently taken, either once in a Week, Fortnight, or a Month, according to the time, the Stomach by reaſon of its degree of weakneſs in the digeſtive faculty may require, doth in any wiſe debilitate thoſe, that may properly uſe them; but on the contrary, rather corroborate their Stomach, by aſſiſting it to throw off that heap of rubbiſh, and crude Humours, which thoſe that eat and drink plentifully, and either live ſedentary Lives, as many that are Educated to Profeſſions, or others that are not uſed to exerciſe or labour, are ſubject to engender, eſpecially if naturally of a weak Conſtitution, or of an advanced Age.

9. For three or four days ſucceeding the uſe of theſe Pills, a good *Elixir Proprietatis*

taken Morning and Evening, in a proportionable Doſe, hath by my Obſervation ever had the good effect of preſerving Health and preventing Diſeaſes.

10. To what I have mentioned touching the advantages of a familiar Acquaintance with thoſe Mundifyers, both the Pills and the Elixir, the inquiry I made of a freſh colour'd vigorous *Dutch* Burgher, I caſually met in my Travels, who exceeded the Age of four ſcore, may in ſomewiſe add a confirmation. He did averr to me *Bona fide*, that for 40 Years laſt paſt, he had ſeldom or never omitted once in a fortnight, or ſometimes ſooner or later, according to the direction he received from his marks of fulneſs and uneaſineſs, to cleanſe with Seny ſtewed with Prunes, from which cuſtom he did derive his capacity of eating a hearty Meal of any thing he liked, without adviſing of the wholeſomneſs, or eaſineſs of Digeſture, and at times of drinking a Glaſs of Wine to an Altitude, to accommodate his Friend.

11. As leſſer Purgatives do rather contribute ſtrength by their conſequence, ſo the greater being properly uſed, do not carry that danger with them People commonly imagine, ſince I have known many, that for Three Months ſucceſſively, have taken ſtrong churliſh purging Pills every Morning, ſome few days only omitted; I may ſay, ſome have ſwallow'd a pottle of ſtrong Purgative Pills in a few Years, and lived in full health to a remarkable Age, and not without a libertine Mode of eating and drinking.

Whence

Whence its apparent, that the toughneſs of the Nerves, upon which the ſtrength and action of the Bowels only depend, doth ſuffer as little by the ſtrongeſt Purgatives, as an *India* Cane by a thouſand times bending, which notwithſtanding will recover its former figure and full ſtrength. It were to be wiſhed, that bleeding could be adminiſtred with the ſame ſafety, of which it may be juſtly ſaid, that the Lancet hath, and doth in proportion kill more Men than the Sword, and it's as commonly obſerved, that thoſe Phyſicians who do ſo generally practiſe it, know little elſe what to do; and on the other hand their Patients are as raſh and prodigal of their lives, to ſubmit to their heedleſs advice. As the firſt and ſecond bleedings may be of great uſe to many Bodies and Diſtempers in the colder Climates, ſo I have ever remark'd, that the third and fourth have proved as detrimental, and not ſeldom fatal; having obſerved, that with two bleedings at moſt, ſucceeded with other proper remedies, incomparatively more continual Feavers, Rheumatiſms, Pleuriſies, and Phthyſicks have been cured; then have ſurvived thoſe frequently reiterated bleedings, which in common Practice uſually give the parting blow.

12. Its a conſequence an Ideot inſerts, becauſe a Perſon having been blooded eight or ten times in a great Diſtemper, doth recover his Health, he owes the benefit of it to the bleedings, whereas it ought rather to be ſaid, neither the Diſtemper nor bleeding could kill him.

13. To return from this Deviation to the uſe of Purgatives; tho thoſe that are ſtrong, are required in great Diſeaſes, they ought to be avoided in leſſer Diſtempers, or where prevention is only intended; for all Purgatives deriving their power from a ſpecifick fermentative Spirit, or Salt, by rarefying or huffing up morbifick Humours, and afterwards by ſtimulating the Nerves to throw them off after ſeparation, when ſtrong ones are taken, where no Diſeaſe is engender'd, they are apt to cauſe one by fermening, or rarefying and ſtimulating the laudable juices or operating upon thoſe dormant humours, which by ſtrength of Nature, or aſſiſtance of mild preventing Purgatives, and abſterſive Corroboratives, might eaſily have been worn off. Thus it hath oft been obſerved, that ſome by taking *Extractum Rudij*, have ſoon after fallen into continual Fevers; others through a preventing care to avert the Gout, have immediately fallen into a violent fit, upon taking *Elixir Salutis*, *Bromfield's Pills*, *Golden Spirit of Scurvy Graſs*, or the like empirical Medicines, which is not all the miſchief ſuch ſort of Purgative vendibles have occaſioned, as being unskilfully invented, and more unskilfully prepared, ſince not a few have been thrown into mortal Diſeaſes by the uſe of them. Yet I ſtand more amazed at the folly of Mankind, that is ſo eaſily allured by vain boaſting and mendacious *Encomia's* upon *Laudanum liquidum* plainly prepared, or diſguiſed by a ſolution of *Opium* into volatile oleaginous drops, to the frequent and

conſtant

conſtant uſe whereof, a Man being once debauch'd under pretence of eaſe, and quieting himſelf of a few Gripes, Fumes, or Vapours, he can no more leave it off for a Fortnight, a Week, or a Day, than a labourer his Bread and Cheſe, or a Man throw off his Coat and Waſtcoat in a hard Winter, or a Brandy-Drinker forſake his Spirits and return to ſmall Beer. Uſing ones ſelf to ſuch plain or diſguiſed Opiates, is like making a contract with the Devil, to live eaſie and well for a few Years, upon condition he ſhall have his Soul to torture afterwards: For certain it is, that the familiar uſe of Opiates, after ſome Months, or very few Years, either doth wholly deſiſt from being friendly, by ſuffering your trouble or Diſtemper to return in a more horrible manner, or create a new one, incomparably worſe than the former, or ſtrangles you with an Apoplexy, or ſome other ſoporous Diſtemper, which is moſt amply proved by thoſe, that make *Opium* their Sacred Refuge in every fit of the Cholick, Gout, or Stone, who ſeldom or never fail of a ſpeedy *Exit*, by ſome incurable Diſeaſe of the Brain, in very few Years; and thoſe that do adviſe ſuch a lethiferous remedy for a common uſe to their Patients, have a greater title to a Halter, label'd with an Inſcription of *Mathews*'s Pills, or Pacifick Drops, than thoſe that murther a Man in the High-way. In what manner thoſe fits of Gout, Stone, Cholick, and other ſharp torturing Gripes, appear to me to be occaſioned,

and by what cauſes, I ſhall give my opinion after this following interlocution.

14. I have in the preceding Diſcourſe given you my ſentiment, that to preſerve Health, and prevent Diſeaſes in valetudinary Conſtitutions, (for ſtrong vigorous Bodies ſtand in no need of other preſervatives, or preventives, than moderation in their *Non-naturals*, the knowledge and ſenſe whereof, Nature hath implanted in all other Animals, as well as in Men,) no better ways and means can be uſed, than applying at certain intervals, to thoſe cleanſers or abſterſives here before mentioned; as for *Aurum Potabile*, or any pretended *Lapis Philoſophorum*, or all *Faber's* Quinteſſences, upon their juſt trials, they have been found to contain leſs vertue in preſerving Health, than a good Chicken Broth.

15. You may remember a caution was given in one of the foregoing Paragraphs, interdicting all Aloetics to thin, hot, and dry Bodies, and ſuch alſo as are ſubject to the Hemorrhoids; and in regard that ſuch Conſtitutions, eſpecially when promoted in Years, do alſo require the keeping the Stomach clean, and free from all ſlimy and nidorous crudities, I do recommend a good *Lenitive Electuary*, not the common, which is ſo ill contrived, and filled with rubbiſh. This following deſcription gives you the form of an eaſie, gentle, and effectual Laxative. Take four ounces of the beſt *Caſſia Fiſtularis* newly drawn, and evaporated to a conſiſtency, (the manner of doing it you may read in a Treatiſe,

tise, called the *Family Physician and House Apothecary*,) *Rhubarb* pouder'd, white *Mechoacan* grated and pouder'd, and clean *Rhenish Tartar* pouder'd, of each a quarter of an Ounce, sweet *Fennil-Seeds* pouder'd, a Dram and half, Syrup of *Marsh-mallows*, as much as will suffice to make it into an *Electuary*. You may take hereof a quarter, or half an Ounce, or sometimes a whole Ounce, dissolved in a quarter of a pint of thin grewel, barley-water, posset, or thin Chicken-broth, once in a Week, Fortnight, or a Month, according to the direction given concerning the Aloetics.

16. *Rhenish Tartar* I do prefer for a Laxative, far before Cream of *Tartar*, which doth lose all or a great part of its solutive vertue in the preparation.

CHAP. VI.

Causes of the Stone, Gout, Cholick, Pleurisies, Rheumatisms, Apoplexy, *&c. Assign'd from a different* Hypothesis.

1. TOuching the causes of those pains, which are felt to be the acutest and most exquisite of any by them, that suffer the Stone, Gout, Cholick, and sharp dry gripes; certain sharp subtil serositie, or rather a vitiated lymph discharged from the Brain through the Nerves on the extremities, being there lock'd up, cause those corroding Gout-pains, upon those sensible nervous parts, though sometimes serosi-

ties

ties, and lymphatic fluors, dripping from other veſſels, may cauſe great pains, but leſs ſharp, and being more ſubject to be incraſſated, may cauſe ſwellings near the Joynts. The ſame ſubtil nervous ſeroſities, or vitiated *Lympha*, being thrown upon the Kidneys, tare and vellicate their moſt ſenſible membranes to ſuch a degree, that ſcarce any torture can equal it, and that ſometimes, though ſeldom, without the leaſt ſuppreſſion of Urine, but for the moſt part with a total, or partial ſuppreſſion, and a great ſharpneſs of Urine, which is then called a Fit; the pain which at other times the Stone in the Kidneys doth occaſion, being only a heavy obtuſe pain of a long continuance, and more frequent returns, which at great intervals, as Spring and Fall, doth invite thoſe cutting ſeroſities to the part, and then alſo are the greateſt Fits; for I cannot conceive that the Stone turning angular, and grating upon the Membranes, is ſo general a cauſe of a Fit of the Stone, as many of the Learned do imagine, ſince a Stone once removed out of its bed or ſeat, whereto its cemented by a glutinous tartarous ſlime, can eaſily, if ever return to its place, and be there faſtned again as before, for which reaſon Phyſicians are very cautious of adminiſtring ſtrong Diuretics, for fear of driving the Stone out of its place. Neither do I believe, that thoſe bloody Urines, which are ſo frequently made by Nephitical Patients, are cauſed by the corners of the Stone being moved, and wounding or grating of the Veins, but are rather

ther cauſed by a ſharp *Serum* corroding the mouths of the veſſels, or blood may be ſqueezed out of the veſſels by the internal ſwelling of the *Parenchyma* of the Kidneys. It doth oft happen, that ſome of thoſe forementioned moſt ſubtil limpid ſeroſities have taken another channel, through branches of the ſame Nerve, that tends to the Kidneys, being divaricated and inſerted into the great gut of the Colon, where they cauſe that great pain, (though leſs acute than the other, that part being by much leſs ſenſible, than the internal membrane of the Kidneys,) which is termed the Stone-Cholick. Since then this acute pain in the great Gut cannot be cauſed by the Stone, at that diſtance, its more than probable, that thoſe moſt exquiſite pains in a fit muſt be occaſioned by ſome other cauſe, which by many Arguments to me can be no other, than the foreſaid ſeroſity. *Secondly*, you muſt conſider alſo, that all Opiates being inwardly taken, perform their Operation by exerting their power upon the Brain, *in principio nervorum*, in withholding the influx of the Animal Spirits, (that communicate ſenſe to the Guts,) and ſtreightning the Nerves, whereby pains are not only appeaſed in any ſingular part, but in all parts equally, ſuppoſing they were all in pain. *Thirdly*, you are to conceive, that there being a digeſtion perform'd in the Brain, in converting the Arterial Blood into Animal Spirits, there muſt be a ſolution, and afterwards a ſeparation and expulſion of Excrements, which in part are a limpid ſerum, that is abandon'd

to

to the ventricles of the Brain, which are the proper receptacles of that Excrement, as much as the thick Guts are of the Excrement of the Chyle, or the Bladder of the Urine, being the Excrement of the Blood. *Fourthly*, this conceſſion is alſo required, that this moſt ſubtil ſharp excrementitious ſeroſity, having quite filled up the ventricles of the Brain in a greater meaſure, than they can well contain, or throw off through thoſe paſſages Nature hath ordained, the thinneſt part is forced into the *principium nervorum*, (the other part being received into the Veins and *Lymphæ-ducts*) and carried either to the Extremities, or Kidneys, where it cauſeth the Gout or Stone, or to the Teeth, where it occaſioneth a moſt exquiſite Tooth-ache, or ſeveral external parts or joints, producing thoſe violent pains, that are termed a Rheumatiſm, or to the *Pleura*, where thoſe ſhrieking Pleuratic pains do enſue. Summarily I do believe, there ſcarce happens any pain, (unleſs cauſed from without,) Tumor, or Puſtul, where this nervous Excrement is not a principal cauſe, which may be more plainly explained in another place.

2. Againſt this Diſcourſe may be objected, That the Nerves obtaining no viſible hollowneſs, cannot be ſuppoſed, to tranſmit ſuch a quantity of *Limpid Serum*, as muſt be conceived to cauſe thoſe before recited Diſeaſes. *Secondly*, That its uncommon, and not natural, for any ſort of veſſels in the Body, that are deſtinated to contain, and convey their natural

natural and proper Liquors, Juices, or Humors, to conveigh any other that is excrementitious, or præternatural. To the firſt its anſwered, there muſt neceſſarily be proportionable cavities in the Nerves, to contain ſuch great meaſures of Juices, as have been frequently obſerved to drip from Nerves, though ſmall ones, that have been cut through in Wounds, and much more from great Nerves; and therefore thoſe larger Nerves near the Brain muſt be thought capable to contain a very copious quantity of moiſture. If the Nerves when cut out of the Body and Dead, do not ſhew any viſible cavities, it is becauſe being emptied of their Spirits, and a great part of their moiſture, their pores and channels do ſubſide and fall to a cloſe compactneſs. Beſides a Nerve that is cut out, and grown from a greater bigneſs to that of an ordinary packthread, when its dried and condenſed, its reduced to the ſmallneſs of a fine Thred or Fibre, which when it was tumid within the Body, and fully extended, muſt neceſſarily have contained a great hollowneſs, though divided into innumerable very ſmall or minuteſt paſſages. In anſwer to the Second, it hath been more than once obſerved, that purulent matter from Impoſthumations in the Lungs, and *Pleura*, hath been evacuated through the Kidneys and Bladder by Urine, whither it hath been circularly conveyed by the veins, that have taken it up. The thinner part of the Turpentine, that by Glyſter hath been injected into the great Guts, hath been

been taken in by the veſſels, and by circulation carried to the Kidneys and Bladder, as appears by the Urine, giving by its ſtrong ſmell of Violets a plain evidence of it. True it is, theſe inſtances are not natural conveyances, neither is it to be underſtood ſo of the Nerves, but to be preternatural.

3. This premiſed, if you apprehend this *Hypotheſis* to be only probable or apparent, (which I do believe to be Truth, though at the ſame time I muſt own, that I do retract from my former Opinions, being thereunto induced by ſundry Experiments and Obſervations) it muſt neceſſarily follow, that Opiates frequently uſed, do at length not only with-hold, but intirely ſtop the afflux of the Animal Spirits, and cloſely ſhut up the beginning of the Nerves, whereby thoſe acute ſeroſities are pent in, and thrown back into the medullar ſubſtance of the Brain, which hapning an Apoplexy, Palſie, Lethargy, or ſome other Mortal ſoporous Diſeaſe muſt unavoidably ſucceed; and hence it is, that in all thoſe, who expire upon their ſeiſure with thoſe Diſtempers, the anterior Ventricles of the Brain upon diſſection, do ever appear filled with ſuch a ſort of acrimonious limpid ſeroſity, the Nerves and other veſſels being either too much filled, or too much cloſed by ſubſidence, obſtruction, or otherwiſe, to admit of a regurgitation thence.

4. Notwithſtanding though the daily, weekly, or frequent uſe of Opiates is moſt certainly attended with moſt pernicious conſequences

ces, yet the extraordinary and ſtupendious benefit it imports, even very oft to the recovering a Man from the jaws of Death, when cautiouſly and neceſſarily adviſed in a fit of intollerable pain, a profuſe Hemorrhage, an impetuous Catarrh, violent Vomitting, a fluding *Diarrhœa*, long and ſtrenuous Hyſterick Fits, when they begin to threaten danger, want of Sleep for many Days and Nights, and ſuch like urgent ſymptoms, may give a juſt cauſe to hold a correſpondency with that or the like Medicine, provided it be not too familiar, and be very well prepared, and that in the interval you prevent the neceſſity of calling this diſſembling pacifick Friend in again, by removing the cauſe of thoſe hazardous Diſeaſes, and that the Patient have Strength, and Spirits enough to wraſtle with ſuch a fallacious and dangerous Gueſt, ſhould he prove too rude. Wherefore I account it the greateſt boldneſs in ſo many little Quacks and empiricks, even ſome Widwives, and Nurſes alſo, who being intirely deſtitute of the neceſſary skill in preparing this ruffian Juice, and much more of the true knowledge of applying it, dare aſſume the confidence of adminiſtring it ſo indifferently to the loſs of ſo many Lives, who in my Judgment can ſcarce have too ſevere a Law made againſt them, eſpecially where a Man may be Murder'd privately, without giving the leaſt jealouſie, that any thing elſe beſides his Diſtemper killed him.

CHAP.

CHAP. VII.

Hypotheſes *of the motion of the Heart, and of Reſpiration.*

1. I Have for a long time with an implicite Obedience ſubmitted to the *Dogmata* of the Ancients, confirm'd by the approbation of the Learned ſucceeding Ages, as appears in former writings, touching the Animal Spirits and Pulſation, which latter in the Heart and Arteries is by them reſolved, to be cauſed by a pulſifick faculty in both, or as ſome will have it, originally in the Heart, and from thence derived or continued in the Arteries. This ſort of explication now appears to me very negligent, and univerſally applicable to any thing; for to ſay the pulſation is cauſed by a pulſifick faculty, is equally to ſaying, that Sight, Hearing, Vomiting, or Purging, is perform'd by an Optick, Auditory, Emetic, or Cathartic faculty; or, to be ſhorter and more general, by a ſpecifick or occult faculty; from which any inquiſitive perſon can receive but little ſatisfaction, or ſcarce make a ſolution of any *Phænomenon*, with the leaſt advantage to the practical part of Phyſick. Wherefore to make my marks bear the better, in reſolving many doubtful Queries, and ſerving for a true and ſafer conduct in the practick, I do rather make choice to ſay, (in imitation of *Copernicus*'s affirming the

the motion of the Earth to the excluſion of that of the Sun or Firmament,) that the Heart and the Arteries do not move the Vital or Arterial Blood, but that the Blood moves the Heart and Arteries to a pulſation; in the ſame manner as may be conceived, that the Air preſſing and filling the Lungs, at the ſame time preſs the Air, that fills the interſtice between them and the Diaphragm, and in a great meaſure moves the latter to a dilatation in the *Inſpiration*, lifting up at the ſame time the Belly with all the included Bowels, and crowding or condenſing the ambient Air, the weight whereof (if I may ſo call it,) or its inclination to be relaxt again, (in indeavouring to return to its former poſition,) together with the fuliginous ſteems, that are forced out of the whole circumference of the Body, in their turn cauſe the retraction or repercuſſion of the Belly and diaphragm, in the *Expiration*; for its a plain and received Doctrine, that the motion of the Diaphragm, which is accounted a great inſtrument in Reſpiration, is as much natural, and more natural I may ſay, than it is ſpontaneous in Beaſts and Infants, or voluntary in Men; and I do farther conceive, if there were no Diaphragm created in Men and Beaſts, the ambient Air is ſufficient, to ſet the wheels of the Lungs on going: For there are abundance of moving living Creatures or Animals, that have Lungs, and do inſpire and expire, on which Nature hath not beſtowed a Diaphragm. So that the great uſe of the

Diaphragm ſeems to me, to be an inſtrument of expulſion, in cauſing, or chiefly aſſiſting to exonerate the Guts of its Excrements by Stools, the Stomach of its offenſive contents by Vomit, and the Lungs by Coughing. It may be likewiſe compared to a *Flabellum*, or Fan, that moves and ventilates all the internal Air contained in the great cavities of the Body. The motion of this internal Air, I do conceive, is as much aſſiſtent to the motion of the Spirits and Blood in the Arteries, Veins, and Nerves, and to the periſtaltic motion of the Stomach, as the Air and Wind is to the motion of the Sea, which latter the greater it is, the higher the Waves are moved. *Secondly*, Natural Philoſophy doth Teach us, That as much Air as is inſpired and admitted into the Body by the Lungs, ſo much Air muſt neceſſarily be forced out of the Body, to make way for its entrance, which plainly tells us, that the inſpiration by the Lungs is the cauſe of an univerſal tranſpiration through the whole Body, and that the ſame ambient Air being lately ſqueezed out of the Lungs, muſt neceſſarily by expiration return into the Body again, through the ambient pores, to make way for that, or elſe you muſt allow a vacuum, or void place in the Air, which is impoſſible, for a place (*locus vocatur, quia continet locatum*) is that which containeth and circumſcribes ſomething, and how can a place then contain nothing, which is a vacuum? *Thirdly*, I take the Diaphragm to conſiſt of two Muſcles, which appears plain enough

enough in the diſſection and narrow inſpection of a Bullocks Midrif, whereof one is made uſe of in the dilatation, and the other in the contraction of the Breaſt; for its abſurd, to believe, that the ſame muſcle can perform two contrary motions.

That no living Creature can ſubſiſt without the Air, and perſpiration, is allowed by all, but for what Reaſon, or what uſe or benefit the Air doth afford it, is only ſlightly aſſerted, *viz.* That it is for ventilation only, that is to ſay, it gently fans and moves the living Spirits, and therein aſſiſts them in ſeparating Fuliginous, and other Heterogeneous little Bodies or Particles, which otherwiſe would choak, or ſuffocate the ſaid living Spirits. In the ſame manner I do conceive, That the Air in ventilating the focal Fire, or any burning flame, doth aſſiſt its moſt ſubtil particles in ſeparating and expelling fuliginous and other corpuſcles, and receives them alſo in thoſe places, which it (I mean the Air) leaves to fill the places, left by the ſaid fuliginous and other corpuſcles; ſo that a Fire or flame ſeems to be extinguiſh'd, or rather ſuffocated, through want of Air, becauſe it hath no places to depoſe its fuliginous and other corpuſcles into, and ſtands in need of its aſſiſtance for ventilation and gentle motion.

From this premiſed Diſcourſe, I deduce theſe conſequences to my ſelf. 1. That upon the goodneſs of the Air (which conſiſts in a juſt temperament, a due thinneſs, and clearneſs or purity) depends chiefly the Health

and long life of Man. Too much heat, or too great thinneſs of the Air moves the Animal Spirits too impetuouſly, and conſequently diſperſes and conſumes them, weakens the Body, and hinders all Digeſtions; whence it is, that people are ſhort lived, and weakly in the *Indies*, long lived and ſtrong in the *Northern* Climates. Frequently and gently moving, and oft changing the Air from one place to another, though only out of one room into another, ſeems to me to conduce very much to Health, becauſe by thoſe frequent removes you avoid inſpiring the ſame fuliginous Air, which you do expire; on the other hand, they that live ſedentary Lives, that are ſlothful, or much addicted to lie in Bed, are ſeldom Healthful, but commonly crazy, and dull in their ſenſes.

2. If change of Air generally is of ſo great an Advantage, it is far greater, and conſequently of neceſſity to thoſe, that labour under any Diſtemper of the Lungs, or any kind of difficulty of breathing; ſo that I have obſerved, that many cannot be cured without change of Air, notwithſtanding the aſſiſtance of the beſt and moſt proper Applications, which ſometimes the Air alone doth Cure, and other times being aſſiſted with very ſmall Remedies.

3. That uſing oft violent motion, and continued long, doth at laſt render the Body Diſeaſed, and is very contrary to Health; for its obſerved, few of thoſe are long livers.

4. I am apt to believe, That in the Air are contained moſt ſubtil corpuſcles, that are homoge-

mogeneous to the Spirits, (though in ſome kinds of Air more, in ſome others leſs,) that nouriſh or multiply, increaſe, or are added to the Animal Spirits, whereby the Body is conſiderably ſtrengthned. *Laſtly*, I do believe, That the Air is the *Primum movens externum* of all living Creatures; for by inſpiration it moves all the Animal Spirits, (as after my manner I have ſhewed before) which move all the humours and muſcles of the Body. Take away the Air, and Life (which conſiſts in motion of the Animal Spirits,) ceaſes at the very moment.

CHAP. VIII.

Of the motion of the Blood, and the cauſe thereof, alſo of its quickneſs or ſlowneſs.

1. I Return to the Heart, which to me appears for uſe, like unto a draining Water-Mill, ſerving to throw off, and diſperſe the water to any parts, whither the Wheel ſhall caſt, or direct it by its impulſe; in likemanner the Heart is an inſtrument, whoſe principal Office is, to throw the Arterial Blood to all parts of the Body; And as the ſpirituous and forcible eruption of Water out of a deep cavern of the Earth at the ſource or ſpring head, together with its being higheſt in ſcituation, (in reſpect of the declination of thoſe places, to and over which its impelled,) is the cauſe of that motion, ſo the Brain may very probably

be eſteem'd the Source, as being the higheſt ſcituated; whence the Animal Spirits do forcibly ruſh out into all the Chanals, Humors, and Parts of the Body. Wherefore, I ſuppoſe the Brain and its Animal Spirits, in reſpect of the Microcoſm, to be what the Sun and its Spirits, or Particles (being its Irradiations or Beams) are, that are diſtributed to all parts of the Terraqueous Globe, where motion is perceiv'd, penetrating to the deepeſt bottom of the Waters, and through the cloſeſt and moſt compact heap of Earth, into its Bowels, where Metals and other ſubterraneous Bodies are engender'd. In like manner do the Animal Spirits penetrate, from the higheſt part of the the Body to the extremeſt parts, as Toes and Fingers, which the ſenſe of Feeling doth atteſt to us; and likewiſe to the deepeſt parts of the Bowels. I do not imagin, that the Animal Spirits being tranſmitted through the Nerves, muſt arrive to the extremities of them, before they can be diſpers'd to all the circumjacent parts; but that the Nerves are pervious throughout all their extent, with lateral Pores, or minute Chanals, through which they burſt out in their deſcent, giving motion to all parts moveable. Neither do I believe there are any Vital or Natural Spirits, (as they are commonly term'd) but they are all Animal Spirits (though in a greater Proportion in the Arteries than the Veins,) that occaſion the Blood to circulate; for to me it appears improbable, that the motion in the Arterial Blood, ſhould cauſe the Blood in the

the Veins to move at ſo great a diſtance from the Heart, when neceſſarily their motion muſt be ſpent at the Capillars, if the force of motion in the Arteries, be by experience found to be leſs and leſs, in proportion of its greater diſtance from the Heart. But that the ſame motion of the Arteries, ſhould cauſe the motion of the Animal Spirits, ſeems to me much more abſurd; for the Animal Spirits being incomparatively more ſubtil, and infinitely ſtronger and more forcible (as appears by moving all the Joints together with the whole Body) can in no manner be conceiv'd to be moved by Vital Spirits, that are much more groſs, and of ſo little force, that they cannot make the leaſt impulſe upon them. If theſe Maxims be true, that *Entia non ſunt multiplicanda præter neceſſitatem*; And *In omni genere oportet ut ſit quiddam primum, Principium numeri eſt unum, & omnes numeri conſiſtunt ex uno*, (or if I may ſo ſay) *DIVERSIS UNIS*; The Brain doth juſtly challenge the dignity of being the firſt and ſole principal part of the whole Body, having an abſolute Empire and Command over all other parts, performing by its Animal Spirits all the Motions, Functions, Actions and Offices of, and in every Bowel, Humor, and all other ſubſervient Parts, which are only Inſtruments that modify and determine the ſaid Spirits. This whole premis'd Diſcourſe is plainly proved to me, by this ſole Argument. The whole body of Man is created for the external Senſes, and local Motion, and theſe for the internal, *viz.* Underſtanding, comprehend-

ing humane or rational Imagination, common Senſe and Memory, which are only three diſtinct Acts of one ſole and chief Faculty of Underſtanding; of which, the *Brain* is the Seat, and the Animal Spirits the Inſtrumental Cauſe; ſo conſequently all the Parts of the *Body* muſt be created, to be ſubſervient to the *Brain* and its Animal Spirits. Secondly, That the Animal Spirits do move the Arterial *Blood*, and the Heart, is clearly evinc'd by the Obſervation of Paſſions. The Sight, or Hearing, perceiving any dangerous Object, conveys it to the underſtanding Faculty in the *Brain*; which, by retracting its Animal Spirits, do at the next inſtant, cauſe a ſlow languid motion upon the *Blood*, Heart, and ſometimes wholly ſtop it. On the other hand, upon perceiving a pleaſing Object, a crowd of Animal Spirits are impell'd into the *Blood*, which immediately occaſions a quicker and more lively motion in the *Blood*, Heart and Arteries, as may be felt by their pulſation: Whence it appears, 1. That the Seat of Paſſions is in the *Brain*, and not the Heart. 2. That the Animal Spirits are perfuſed thro' all the Arterial, and conſequently Venal *Blood*. 3. That nothing in the *Body*, doth move ſo ſwift as the Animal Spirits. 4. That the whole *Body* is pervious with Pores, and moſt ſubtle Chanals, of various Figures and Dimenſions. *Mercury* by external unction, or fumigation, is let into the *Body*, through the ambient external Pores, even to the *Bowels*, and the *Brain* it ſelf, though applied never ſo remote.

Aloes,

Aloes by friction about the Navil, or any part of the *B*elly, paſſeth through the Pores to all the circumveſtient Membranes and Muſcles, until it arrives to the Guts, where it moves Stools, kills and expels Worms. *Tobacco* applied to the Wriſt, by penetrating through the external Pores to the Veſſels, Humours and Spirits, by circulation reaches the Stomach, provoking it afterwards to Vomit, and in ſome Bodies violently enough. *Cantharides* externally applied commonly cauſe ſharpneſs of Urine, and ſometimes bloody. Opiated Unguents, though applied to the Soles of the Feet, ſoon reach the Brain. On the other hand, I have oft obſerv'd the ſcent of ſome Medicines, which I us'd to give in Venereal Diſtempers, to paſs through the Body to the external Skin, which always prov'd a certain ſign the Patient would be cur'd. By all which it appears, that thoſe foremention'd Externals were impell'd through the ambient Pores, by the Air lately expir'd, and crouding into the Body again, at the next inſpiration, and that thoſe Antivenereal Medicines, were driven out of the Body to the circumferential parts, by the Air expiring. 5. That the Heart is not a principal part of the Body, but an inſtrumental and ſubſervient part. 6. That the Animal Spirits are *Toti in toto, & toti in qualibet parte*, performing, as I ſaid before, chiefly and principally, as the ſole primar efficient Cauſes in all the Body, and in every part thereof, all the Offices, Functions and Actions, except the Rational; wherein its only

In-

Inſtrumentally ſubſervient to the *Anima Rationalis*. I muſt confeſs, that this Paragraph is not very Philoſophically expreſs'd, neither am I endu'd with Senſe enough to defend it from all Objections, and ſeeming abſurdities, and therefore, ought rather to be referr'd to Metaphyſicks, or a *Credendum*. 7. It alſo follows, that we need give no greater reſpect to *Cordials*, then to *Hepatics*, *Pulmonics*, *Splenetics*, or to any other appropriated Medicines; but the chiefeſt and principal Medicine ought to be reputed a *Cephalic*, ſo that inſtead of ſaying *per Excellentiam*, this or that is a *Cordial*, we ought to ſay, its a *Cephalic*; for all thoſe that are commonly call'd Cordials, are no other than true *Cephalics*, and no otherwiſe helpful, than by relieving the Animal Spirits, and comforting the Brain and Nerves. Moreover, all the Hypochondriac and Hyſteric Symptoms, as Palpitations of the Heart, various Pulſations, ſometimes ſlow, quick, low, or intermittent, Faintneſſes, Swoonings, faint Sweats, Convulſions, ſwimming in the Head, (*Vertigo*) choakings in the Throat, ſtiffled, difficult, oppreſſed, and inſenſible low Breathings, frequent Sighing, tottering weakneſs of the Joints, deſponding ſorrowful thoughts, Urine ſometimes as clear and limpid as fair Water, othertimes white, turbid and muddy, ſometimes high colour'd, othertimes pale; Gripings, croaking and thundering Noiſes about the Bowels and Guts, Vomiting, and ſharp continuatting Pains at the Stomach, Belchings, Yawnings, Dimneſs,

and

and recurring darkneſs of Sight, (*Scotomia*) noiſe in the Ears, creepings between the Skin, Crying or Laughing, or maddiſh Paſſions, beſides many more, are all Symptoms of a diſeaſed Brain and Nerves, preternaturally affected, diſcompos'd or vitiated Animal Spirits, and are reliev'd no otherwiſe, than by Medicines, that relieve and operate upon the Animal Spirits, and immediately by them upon the Brains and Sinews; ſuch are chiefly oleaginous volatil Spirits, and more eſpecially thoſe that conſiſt of a penetrating durable Sulphur; for if they are only Volatil Spirits, (tho' in that form they are experimented to be very helpful) they exert, loſe, and ſpend their Virtue before they can arrive to the Brain; and therefore its neceſſary they ſhould be oleaginous and ſulphurous, and conſequently more laſting. It is alſo found experimentally, that gentle Narcotics have a great influence, in ſuddenly ſuppreſſing all thoſe recited Symptoms; which being univerſally owned to operate only upon the Animal Spirits, Brain and Nerves, is a manifeſt Argument, they are occaſion'd by an ill affected Brain, and Vitious Animal Spirits. All theſe prenumerated Symptoms do accompany a preternaturally affected Brain. and muſt be acknowledg'd to proceed from vitious Animal Spirits, *viz.* Convulſions, tottering weakneſs of the Joints, ſorrowful Thoughts, dimneſs of Sight, noiſe in the Ears, *&c.* excepting Palpitations, intercurrent and various Pulſations, which cannot be thought a Primar, but a Secundary

(*per deuteropathiam*) Affection of the Heart, occaſion'd through the Vitiouſneſs of the Animal Spirits, ſtimulating, or othertimes retarding the Fibres of the Ventricles, and Valves of the Heart in their motion. How and by what means the Animal Spirits may be vitiated, either by the ill mixture of the conſtituent parts of the blood, and its impurities, and commixtures with adventitious, or other noxious Particles, will take up more room to explain, than I purpoſe to allow here in this ſmall Volumn, which otherwiſe may eaſily be render'd intelligible, or applicable by every Judicious Reader in Phyſick, and therefore I ſhall forbear any further Diſcourſe about it. 8. To corroborate my Aſſertion in the preceding Paragraph, *viz.* that Cordials ought rather to be call'd *Cephalics*, may be plainly deduced from the ſudden Relief, Patients in Swoonings and Faintneſſes do receive, from the ſcents of Spirits of *Sal Armoniac*, of Hartſhorn, *Cranium humanum*, *Sanguis humanus*, of *Galbanum*, *Aſſa fœtida*, and the like; alſo from the friction of the Temples, with the thinner ſpirituous Oyl of Amber, which being admitted into the branches of the Carotidal Arteries, are convey'd to all the parts of the Brain, where they rouze up, quicken and ſtimulate the Animal Spirits, and diſintangle them from any adhering offenſive Particles, whereby the Patient being ſuddenly revived out of his Faintneſs, and Swooning, and the inordinate pulſation of the Heart reduced, is a manifeſt proof, that theſe Symptoms commonly are not depending upon

upon any Primar Affection of the Heart, but upon the diſturbance of the Animal Spirits. 9. Many have been much puzzl'd in ſome doubtful Matters relating to Infants in the Womb; as, Whether in that Station they have Reſpiration, and whether their Heart and Arteries have Pulſation; and conſequently, whether the Blood in the Infant doth circulate, and whether the Animal Spirits exerciſe the ſame Functions which they do after it is come out of the Womb. I do conceive, the Infant, as long as it continues in the Womb, doth only live the Life of a Plant, and is like to a Sucker that receives its Growth from the Tree, in receiving its Nument and Augmentation from the Mother: it hath no Reſpiration, or as little as can be imagin'd; and conſequently, that its Heart and Arteries do not undergo any Pulſation; neither doth the Blood circulate in its Veſſels, nor do the Animal Spirits perform thoſe Functions they are intended for after the Birth of the Infant. The Parts of the Infant in the Womb lying ſo compact and cloſe, and every place fill'd up with Humours, Excrements and Internal Air, there is no room left to admit Air from without; eſpecially being incloſed by two thick Members, and a ſurrounding Moat of Serous Humours: It being the External Air forcing into the Lungs is the chief Cauſe of Inſpiration and Expiration, as I have expreſſed before, that being excluded, there can be no Reſpiration in the Infant in the Womb. What I have to ſay concerning the

the Manner and Cauſes of Pulſation, may be beſt underſtood by a Compariſon to the Sea; which (tho' it be in the calmeſt Seaſon) is ſubject to heave up and ſink down, or to be dilated and contracted, as appears by its Waves, which is not unlike the Pulſation or *Diaſtole* (Dilatation,) and *Syſtole* (Contraction) of the Heart and Arteries. The Heaving up of the Sea I will only ſuppoſe to be cauſed by an Expanſion and Rarefaction occaſion'd by the Motion of the Salin Spirits of the Sea, of which it may be thought very pregnant by the ſtrong Smell (being *a parte objecti* the Salin Spirits acting upon or vibrating the Olfactive Organ) of Sea-men's Clothes, and other things. The Air being crouded or condenſed by the ſwelling of the Waves, forces them down again by the Inclination it hath to recover its former place: In the ſame manner I do conceive that the Animal Spirits that are copiouſly perfuſed through the Arterial Blood do expand, dilate and rarefie it, which cauſeth the *Diaſtole* or Dilatation in the Heart and Arteries, whereby the Air that is enter'd by Inſpiration into the Lungs and all other Ambient Parts of the Body, and filling all the Pores that are capable to receive it, is condenſed and crouded; they relaxing, beat back the Sides of the Heart and Arteries, which being ſtreighten'd, have an Inclination to return, and then occaſion the *Syſtole*, or Contraction. The fore-mention'd Compariſon differs in this, that the Arteries are moved continually, in Contraction and Dilatation, throughout their whole

whole Length, reciprocally, all at once; whereas the Sea is moved into innumerable diſcontinuated Waves, that are lifted up and fall again at oppoſite and different times; while one Wave riſes, the other falls. To which I can only anſwer, Were the Sea coated about with a thick ſtrong Coat, as the Arteries in proportion are, all the Parts of the Sea, or the whole Surface, would be uniformly heaved up at one and the ſame time, and fall in the ſame Order, as the Arterial Blood doth in Pulſation.

2. This Hypotheſis (how probable ſoever, or true ſeemingly, it may be, I will not diſcuſs at this time) implying the Neceſſity of Admiſſion of External Air to cauſe Pulſations, explains that the Heart and Arteries of the Infant in the Womb do not pulſate regularly, or orderly; neither do I doubt but that the Animal Spirits do in ſome wiſe move the Blood, (which elſe by Stagnation, would be ſubject to Putrefaction,) tho' not circulate. And here a Queſtion may be moved, Whether the Blood in its Circulation, or paſſing out of the Extremities of the Arteries, into thoſe of the Veins, is preſſed out by the Rarefaction and Expanſion of the Arterial Blood by the Animal Spirits in the *Diaſtole*; whereby taking up more room, and as it were overflowing, it is ſqueez'd out; or whether it is forced out by the Vigour of the Animal Spirits, and the Compreſſion of the Arteries in the *Syſtole*? But then another Queſtion muſt follow; How, and by what Force, is the Blood moved

ved in the Veins, where there is no ſenſible or manifeſt Pulſation? For to ſay that 'tis the Force of Pulſation doth move it out of the Extremities of the Arteries, into the Extremities of the Veins, through the fibrous, intercurring, moſt minute Paſſages, or Pores, by Pulſation, or rather Protruſion: or thruſting forward, muſt run us into great Difficulties, if not Abſurdities. For, *Firſt*, Conſidering that the Force of Pulſation or Protruſion muſt be extreamly abated in the aforeſaid Extremities of the Arteries, and more in the Intercurring Paſſages, and yet more in the Extremities of the Veins, which ſuppoſe in the Toes, can you rationally imagine, that the Force of Pulſation, that is ſo very much diminiſh'd, if not wholly extinguiſh'd, can be ſufficient to force and thruſt forward through ſo great a Length (as reaches to ſo far a diſtance as the Heart) ſo great and weighty a Maſs of Blood, which it muſt by Proceſs encounter with in the bigger Veins, beſides the Reſiſtance it muſt meet with in the ſeveral Meanders, Turnings and Windings, and a great many Valves (making a great Reſiſtance) of the ſaid Veins, that will ſtill yet more deaden the Force of Protruſion; and yet more, if the Body by ſtreightneſs of Clothes, or lying upon one Side, ſuffer a Compreſſion and Narrowneſs in the Veins and Arteries? *Secondly*, Suppoſe the left Ventricle, when fill'd, to contain two Ounces, more or leſs, of Blood (according to the Opinion of ſome Anatomiſts) in a Heart of a mean Size; and that, according to the ſame Opinion, by every

every *Syſtole* the ſaid two Ounces are with a violent Exploſion, as if it were with a Spring, thrown into the Arteries, it muſt follow, that by every Pulſation ſo much is receiv'd and impell'd into the Veins, which being deſtitute of a forcible Pulſation to return it to the Heart, cannot poſſibly in the ſame length of time diſcharge it; eſpecially, the Blood being now grown more condenſed, incraſſated, more fibrous, leſs ſpirituous, and poſſibly from a lower to a higher place, and through all the Valves, which as I ſaid before, make a very conſiderable reſiſtance. If then the Veins can not receive ſo much Blood, as is thought to be propulſed by two Ounces at a time, by every *Syſtole*, when probably they cannot receive a Dram or two at moſt, at every *Syſtole*, what muſt become of the remaining fourteen or fifteen Drams, that is by every Pulſation thrown out of the Heart? * It muſt either return, and regurgitate into the Heart, upon which, either an intermittent Pulſe muſt follow, or a total ſtagnation, and conſequently Death. In ſhort, to make the Veins capable of receiving as much, as by Pulſation is thrown out of the Arteries, you muſt grant as rapid a motion or flowing in the Veins, as there is in the Arteries, which all that have the leaſt ſenſe muſt deny; for the Blood in an *Arteriotomia* doth ſpurt out of the Arteries with ten times the force, and in ten times the quantity, in the ſame proportion of time, and conſequently is moved ten times ſwifter. It muſt then follow, that in every *Diaſtole* the

* *Abating ſo much Arterial Blood as is taken up in the nouriſhment of the parts, and in the ſupply of matter for animal Spirits.*

Ventricles of the Heart are either not quite filled, or not entirely emptied in every *Syſtole*, which I do verily believe is ſo. By what is here diſcourſed, it appears, that very oft the cauſe of an intermittent Pulſe is the incapacity of the Veins, by being obſtructed in ſome place or other, to receive the proportion of what is thrown into them by the Arteries; and the cauſe of an univerſal ſtagnation may be thought too great a repletion in the Veins, wholly excluding the reception of any Blood from the Arteries.

3. Should it be allow'd, that the Heart by every *Syſtole* throws two Ounces of Blood (which ſome do aſſert the left Ventricle to be capable of containing) into the Veins, and that they receive it; then it will follow, that reckoning only 500 Pulſations in a quarter of an Hour, there muſt be circulated fifty Quarts; and conſequently, that the whole Maſs of Blood, or all the Blood that is in a moderate Man's Body (which is thought to contain from Eight Quarts to Twelve, according to the greater or leſſer quantity of the fulleſt, or thinneſt of Men, being in Health, muſt be circulated or moved round from the Heart through the Arteries into the Veins, and thence into the Heart again in three or four Minutes, and about a Pint every eighth part of a Minute, which muſt require a motion more rapid, and make a greater noiſe, than the *Thames* under *London-Bridge*. Such a career in the Blood muſt be ſuppoſed to make more way in fewer Weeks, than the

the Sea and Wind together do, in carrying a Ship to the *East Indies* in many Months. Beſides, ſuch a violent motion would not only burſt the Veins, and break the Fibres of the Blood, but chern it into Red Butter, and Blue Butter-Milk. Moreover, motion cauſing heat, ſuch a violence would immediately put the coldeſt *Feelander* into a burning Fever. It is obſerv'd, that the too violent and quick motion in a continual Fever, makes a ſeparation in the Blood of the Oyly ſulphurous parts, ſwimming on the ſerous.

4. That the Ventricles of the Heart are not fill'd by every *Diaſtole*, nor quite emptied by every *Syſtole*, appears plainly in Hypochondriacs, and Hyſterics, who ſometimes having a large, high and quick *Diaſtole*, (as may be felt by feeling the Pulſe of the Wriſt) and a low, ſtreight, and ſlow *Syſtole*, ſhews that the taking in, muſt be more than the going out. Soon after the *Diaſtole* is chang'd from large to low, ſmall and ſlow, and the *Syſtole* quick, which ſignifies a leſſer repletion of the Ventricles, and conſequently, that they were not fill'd as before. What can you think of a vermicular Pulſe? Here you muſt allow, that the Ventricles are far from being filled in the *Diaſtole*, or emptied in the *Syſtole*. I do foreſee, that it may be reply'd, that notwithſtanding the Pulſes do vary from large and full, to narrow and ſmall, the Ventricles may be filled, becauſe in thoſe narrow, low Pulſes, the ſides of the Ventricles do fall, and then conſequently may be fill'd accordingly. That is to

ſay, the Fibres of the Heart are relaxed, and ſo the Ventricles muſt fall into a narrower compaſs, like unto a Bag that's empty, for want of ſomething to fill it; but then, ſtill its a Sign they have a capacity of being fill'd, which they are not by every *Diaſtole*, as I have ſhew'd before.

5. From this premis'd diſcourſe it muſt neceſſarily follow, that the influx of the Blood into the Ventricles, is the cauſe of filling them more or leſs, according to the proportion of the Blood flowing in, and conſequently to that, that its the Blood moves the Heart by rarefaction and ſtimulation, according to the proportion of quantity, and quality of the Animal Spirits its repleted with. If the Blood be thick and groſs, for want of Animal Spirits to rarifie and move it, the *Diaſtole* muſt neceſſarily be ſlow and low, becauſe the Blood through its thickneſs, cannot enter in any great quantity, nor ſtimulate; if it be thin, much rarified, and full of good Animal Spirits, the *Diaſtole* muſt be large and high, and if very ſtimulating, quick. So that the variation of tunes of all the Pulſes muſt be cauſed, in my opinion, by the quantity and quality of the Animal Spirits, and the Blood; and the cauſes of ſtagnation, intermiſſion of Pulſes, and ſeveral other affections of Pulſes, of Apoplexies, and abundance of other difficulties cannot ſo readily be aſſigned, and reaſons given thereof, but by ſuppoſing only (though it were really otherwiſe) that the influxe of the Blood is the moving cauſe of Pulſation,

ſation, and not the Heart; which notwithſtanding all Objections, whereof in the next Paragraph I ſhall recite the chief of them, I do believe to be true.

6. That a Muſcle is the cauſe of motion, its vulgar definition, or rather deſcription doth imply, *viz. A Muſcle is an Inſtrument of voluntary motion*, which ſeems to overthrow, what is by me aſſerted for a ſuppoſition, on which the proceeding Diſcourſe of the cauſe of Pulſation doth depend; and conſequently that the Heart being a Muſcle, muſt be the cauſe of the motion of the Blood. To which I do anſwer, That the Heart cannot properly be term'd a Muſcle, becauſe its motion is not voluntary, as muſt be own'd by all, but Natural, and if ſo, muſt be moved by an Intrinſick (in relation to the Heart) moving cauſe, which can be no other than the Blood and the Animal Spirits, wherewith its repleted: for *Quicquid movetur, movetur ab alio.* True it is, the fabrick of the Heart is very like to a Muſcle, I ſhould rather ſay to a two-fold Muſcle; whoſe Fibres conſiſting of two different Orders, Poſitions, Figures and diſſeminations, do both meet in the Cone, exactly reſembling a two-fold Tendon, ſo that one Muſcle ſeems form'd for dilatation, or opening to admit the Blood, and the other for contraction, or ſhutting out, or diſploding of the Blood, both theſe analogical Muſcles receiving their Animal Spirits from a branch of the ſixth pair.

7. Touching the motion of the Blood in the Veins, which to me appears, cannot be cauſed by pulſion of the Arterial Blood, as being moved incomparatively ſlower, by reaſon of its conſiſting of thicker and groſſer parts, and fewer Animal Spirits, and being much hinder'd by the Valves, breaking the force of its motion, which ſaid motion I do ſuppoſe, is cauſed by rarefaction of the Blood, through the continual and forcible agitation of the Animal Spirits, by which means it's ſqueeſed or preſſed forward; and furthermore, I am apt to think, that there is a kind of pulſation in the Veins, but ſo weak and low, that it's ſcarce perceptible. It is likewiſe my opinion, that the local motion of all the Humours, whether natural or preter-natural, or excrementitious, is cauſed by rarefaction. Before I leave this Subject, I think my ſelf oblig'd to let you know, I am not ſo forgetful, as not to remember, that in ſome former Writings, I have ſet down ſome Opinions much different, and others contrary to theſe I have now declar'd, being miſled by commonly receiv'd Sentiments of the Learned, and now (as I do believe, for I ſhall ſcarce be ever poſitive in any thing) better inform'd by many Experiments.

CHAP.

CHAP. IX.

Of Celebrated Remedies againſt Conſumptions.

1. FOR the preſent I have detain'd the Reader long enough in Theoretics, I will now make bold to offer ſome Obſervations on the Practick, the Vanity whereof in many particulars, appears to me very extravagant: And in regard I would avoid being troubleſom, I ſhall only make choice of thoſe Diſeaſes, that are moſt univerſal, and begin with *Conſumptions*, I mean ſuch as are occaſion'd, by an Hectick Fever, and attended with a chronical putrid Cough; namely, ſuch as is caus'd by a putrid ſlime, and ſometimes accompanied with an Ulcer in the Lungs, known by its purulent expectorations. I will not undertake here to enter into a diſcourſe of its Cauſes, and Indications, that are to be drawn thence, but only recite ſuch Remedies, to which many do attribute great Virtues, and make appear, how vain, fruitleſs and deceitful they are. By the way let me tell you, there are many conſumptions, that may properly be ſo call'd, that are neither occaſioned nor accompanied with an Ulcer in the Lungs, but ſometimes in the *Bronchia*, othertimes in the *Aſpera Arteria*, and ſometimes with no Ulcer at all, but very oft with an ulcerous

putrid ſlime only. Paſſing by the gentle Purgatives, as *Caſſia*, *Rhubarb*, *&c.* that may be neceſſary in the beginning, and ſometimes in the Progreſs; I ſhall only examin the Remedies, that are ſo highly recommended againſt Ulcers in the Lungs, and ulcerous Coughs of Conſumptions.

2. *Syrup of Turnips* is a very celebrated Remedy here in *England*, and no where elſe; which after it had been uſed by many in proportionable quantities, at ſeaſonable times for three Month ſucceſſively, they have notwithſtanding all its Praiſes, gone off, without the leaſt abatement of their Coughs, or improvement in their habit of Body. Neither can I any ways diſcover, whence thoſe pretended Vertues ſhould proceed, or in what part of the Turnip its wonderful ſtrength doth lye. Its apparent enough, that the expreſſed boyl'd Juice is wateriſh and windy, not nouriſhing, nor abſterſive, neither hath it ſuch a cooling quality, as to have the leaſt prevalence in abating the Hectic Fever; ſo that I do look upon it to be a fooliſh vain Medicine. True it is, that the Sugar in it may ſeem to allay the ſalin ſlime, ſmooth, and leniſy the Gullet, which upon this occaſion is ever very rough, and ſo in ſome meaſure ſeem to caſe that part for a little time; but after it hath been ſome little time in the Stomach, turns into a very ſour, piercing, and almoſt corroding moiſture, which allowing after ſome conſiderable time it doth arrive to the Lungs and Windpipe, muſt under thoſe qualifications render the

the ſaid Parts more rough, and rather provoke, than in the leaſt abate the Cough.

3. But *Ground Ivy*, alias *Ale-hoof*, *alias* under ſeveral other Names, is the *Catholicon* of the Vulgar, and of many Phyſicians alſo, who appropriate it to the Eyes, Kidnies, Bladder, Lungs, and to the cure of internal and external Ulcers, proclaiming it the chief of all Vulneraries. Theſe ſingular commendations do incourage many to uſe it in all their ordinary Drink; ſome for to cure and preſerve their Eye-ſight, others againſt the Stone, Gravel, Hypochondriac Vapours; and in Conſumptions ſuppoſed to be cauſed by an Ulcer in the Lungs, it is entertain'd for a None-ſuch. *Quercetan* the *Armenian* gives you his word, that with the Juice of it boil'd into a Syrup with Sugar of Roſes and penid Sugar, mix'd with Flowers of Brimſtone into a *Lohoch*, he hath recovered many deſperate Conſumptives, who either in my opinion, were not in a proper Conſumption; or Chymiſt like, boaſted of what he never obſerv'd. All thoſe eminent qualities of this Ground-Ivy, are ſuppoſed to flow from a diuretic and abſterſive Virtue, as moſt Traumaticks are thought to do their feats by. But where this ſubtil Spirit, or bitter Salt is to be found, I am yet to ſeek. I have ſundry times advis'd it to Conſumptives, to be uſed ſometimes ſingly in a Syrup, other times join'd to *Bugle*, *Speedwel*, *Saniele*, St. *Johnſwort Flowers*, *China root*, (and ſometimes *Sarſaparila*) *Dates* and *Liquoriſh* boil'd to a good ſtrong Decoction, to be

ſweetn'd

ſweetn'd with Sugar of Roſes, and taken at *Horis Medicis*; beſides a ſmaller Decoction made with the addition of a few freſh Ingredients, to be drunk at other times. This though uſed ten or twelve Weeks ſucceſſively, with a good Barly Broath and Milk Porrage Diet, I have obſerv'd to be as ineffectual, and unſucceſsful, as all of the other celebrated Remedies I ſhall hereafter write. True it is, that many youthful, or otherwiſe ſtrong Bodies, that have been moleſted with a long ſtrenuous Couch, copious and foul Expectorations, ſo as a ſenſible waſting of the Fleſh and other parts hath enſu'd, have been reſtored to Health, upon taking Pectoral Syrups, and Decoctions made after the forementioned Model, whence to thoſe Remedies the Titles of *Infallible* and *Sovereign* have been attributed, whereas the Diſeaſe was not accompanied with an Ulcer in the Lungs, or an Hectic Fever, but remov'd by ſpareneſs of Diet, and poſſibly change of Air, ſo that not the leaſt advantages have been derived from theſe Pectorals, but rather a detriment, If you will with me believe, that all Sugars and ſugared Medicines turn ſour in the Stomach, and aſſume a ſharp fretting, and ſometimes corroding quality. Is it not a dayly Obſervation, that many Perſons of the beſt Quality laboring under a Conſumption, whoſe Fortunes do enable them to be aſſiſted by a *Chorus* of Phyſicians, performing their utmoſt endeavours, by preſcribing all the noted Pectorals, maugre all their uteleſs efforts, are forced to yield to the

fury

fury of their Diſtempers? However, take notice that I do not offer this ſort of diſcourſe, to diſcourage any Conſumptive from applying to a Phyſitian; for conſidering, one ſo Diſeaſed is under a Sentence of death, and to continue ſo, is to dye every Day, every Week and every Month, which is more terrible than a Peſtilential Fever, whereof a Man dieth but once, the adviſing with a Phyſician, who ſhall give you hopes every Day, Week and Month, of recovering of you, will wholly abate your terror, until the very fatal Moment you leave him, and he leaves you.

4. *St. Johnſ-wort* in its Flowers, under the notion that it's one of the chiefeſt Tranmatics, having by infuſion in Water, Mead, or Small-Ale, and a little boiling towards the latter end, impregnated either of theſe Liquors with its Virtues, and with Sugar, or rather Honey ſeduc'd into a Syrup, is by many approved very ſoveraign to Conſumptives; the truth whereof can be beſt atteſted, by ſeveral that have uſed it ſeveral Weeks to no purpoſe.

5. Among all the decanted Remedies againſt Conſumptions, I find Phyſicians have a great reſpect for *Sugar of Roſes*, and for being a kin to that, for *Conſerve of Roſes*; of which former, it is the report of *Avicem*, that a certain Woman, who was in a deſperate Conſumption, was not only recover'd by it, but made fat thereby; add hereunto a concurring teſtimony of *Meſues*, that many have been cured by it of Conſumptions, that being no leſs recommended to them than the latter, *viz. Conſerve*

ſerve of Roſes by *Montanus*, *Valleriola*, and *Foreſtus*, who pretend abundance to have been cured by uſing vaſt quantities of it; and *Riverius* tells you likewiſe, that he knew an Apothecary, that was cur'd of a Conſumption, only by almoſt continually eating *Sugar of Roſes*. On the other hand I am well aſſur'd, that moſt practiſing Phyſicians, if they are pleas'd to ſpeak the Truth, can tell you, they have known hundreds of Conſumptives, that have uſed it in groſs quantities, without the leaſt benefit; as for my own particula, I am ſo far from believing, that any Conſumptive, to whom at any time I have advis'd it, upon the credit of the forementioned Authors, have receiv'd any advantage, that they rather were render'd much worſe by it: And my Opinion further is, ſcarce any thing is more unwholſom than Sugar, whoſe greateſt uſe is to pleaſe the Palates of Women and Children, and to preſerve Fruits and Herbs from corrupting. It cannot be denied, but that eating much Sugar deſtroys the Appetite, by raiſing fermentations and ebullitions, which extreamly annoy Digeſtion; ſometimes cauſes looſeneſſes, Fevers, ill habits of Body, *&c.* and is no ways Pectoral.

6. Of all Sweets, nothing is more Pectoral than *Engliſh* Liquoriſh, and its Juice; and if it be true, that moſt Countries afford a native Remedy for Endemick Diſeaſes, they are ſubject to breed, Liquoriſh may very well be accounted as ſuch in Coughs, and thoſe Diſeaſes of the Breaſt.

7. We

7. We are then to conſider the Sugar in the Conſerve, and Sugar of Roſes, to be intended only as a preſerver to the Flowers, and their Juice; and therefore the principal Virtue muſt reſide in the Juice; and how far that is Pectoral, or abſterſive to the Ulcers in the Lungs, I cannot well apprehend, eſpecially if it be ſaid to be drying, binding, ſtopping, reſtringent, and conſolidating, which moſt certainly are qualifications contrary to ſmoothing or abſterging; for what is binding and rough, muſt cement, thicken, detain, bind and faſten the putrid matter in the Lungs, and entirely hinder and ſtop up the Expectoration, either of purulent matter, or putrid ſlime. So that I cannot conceive thoſe Authors recommended thoſe Roſie Remedies againſt Ulcerous Conſumptions, but only againſt ſuch asthey ſuppoſed to be occaſioned by a Catarrh from the Brain of thin ſalin Rheumsupon theLungs,which the drying and conſtrictive quality of the Roſes might thickeen, and by ſtraigthning the paſſages, put a ſtop to the Catarrh. That humours falling upon the Lungs do cauſe a Cough, cannot be apprehended; for being without ſenſe, and having no Nerves diſſeminated through them, are not capible of being ſtimulated into a Cough; ſo that what ever is conceiv'd to occaſion a Cough, muſt be ſomething anoying and ſtimulating of the *Bronchia*, or Lungpipes. Neither is it probable, there can be any Catarrh fall from the Brain, that being ſhut up as cloſe as a Box by its Membranes,

and

and bones of the *Cranium*. Wherefore thoſe Rheums can only be thought to drip out of the Glandules of the Throat, and *Aſpera Arteria*, upon which thoſe aſtringent Medicines do ſeem to have an Influence.

9. Certain it is, that ſuch ſaline Rheumatick Conſtitutions are very ſubject to be extremely emaciated, againſt which its no wonder, if a Diet of Aſſes, or other Wheyiſh Milk, together with their *Hordeata*, and *Amygdalata*, Snail waters, Decoction of Snails, Lobſters, and yellow Saunders, proved ſuch auxiliary Remedies; though I can never believe theſe *Hordeata*, *Amygdalata*, Waters, or Decoctions of Earth Worms, Snails, Claws of Lobſters, (whereby as *Cardan* doth write, he hath cured many deſperate Conſumptions, to whom being more an *Italian* Romantick Aſtrologer, than a Phyſician, little credit can be given.) Syrup of Comfry, of Milfoil, Bugle, and the like, they being all thickners, ever cured the leaſt Ulcer in the Lungs.

10. Much leſs can I believe, that ever *Eraſtus*, *Fracaſtorius*, and other *Italian* ſubtle fourbs ever cur'd ſo many Conſumptives (as they pretend more out of a decoy to allure Patients, than a real Truth) with a Decoction of *Guaiacum*, who probably were macerated by a Pocky Conſumption, which is ſo Epidemick among them, and no leſs endemick, being the place of its Nativity.

11. Some are ſo void of Senſe, to approve of *Spirits of Sulphur*, or *Vitriol*, given in four or

or five drops, in a ſmall Glaſs full of Plantain or Roſe-water.

12. The Narcotick Thickning and Emplaſtick Powder of *Hali Abbas*, conſiſting of the Seeds of white Poppy, Cucomber, Melon, Citrul, Quince, Gourd, Porcelane, and Mallows, Gum-arabick, Tragant, Starch, burnt Ivory, Juice of Liquoriſh, Penid Sugar, is a meer heap of Rubbiſh, by which *Velaſcus de Taranta* and *Foreſtus* do each affirm, to have cured a ſingle Patient of a proper Conſumption; but ought not to be credited, that probably being only an Emaciation from ſuch a Catarrh of a ſaline Rheum, as is before mentioned; notwithſtanding this Powder is ſtill in great eſteem among many Phyſitians, who never yet obſerv'd their Patients receiv'd any great benefit by it.

13. An *Elixir Proprietatis* tartariſed, and ſo prepared, as to be very little bitter, and not laxative, uſed in a Decoction of Mallows or marſh Mallows in Whey, Mead, or very ſmall Ale, is a Medicine far more commendable than any yet propoſed. But the moſt proper Remedy I could hitherto yet diſcover, is a ſubtil penetrating Balſamic Tincture, taken in a true pectoral Decoction for a month, or ſix weeks.

14. As for *Aſſes-Milk*, it is rather a medicinal Diet, than a proper Remedy; and, as I ſaid before, by diluting and nouriſhing is helpful to ſalin emaciated Bodies, and to ulcerous Conſumptives alſo, though if it ever ſingly cured one ſuch, it hath fail'd a thouſand times in others.

15. *Sul-*

15. *Sulphur*, though indued with an extraordinary Virtue againſt all internal and external Ulcers, is not to be underſtood as ſuch, being exhibited in ſubſtance, whether in Flowers or otherwiſe, but ought to be diſſolved and open'd by a proper *Menſtruum*.

16. Before I conclude this Chapter, I can ſcarce paſs by an Obſervation upon ſome deceitful Empirics, who after Patients have Labour'd a long time under a proper Conſumption, and a tedious fruitleſs cure of Phyſicians, have found a way to let themſelves in by a ſpecious Promiſe, accompanied with a large Declaration of bombaſt Words, that they ſhall be Cur'd in 6 or 8 Days, by only adminiſtring ſome common pectoral Julep or Apozem, proportionably enforc'd with *Diacodium*, or *Laudanum Liquidum*, by which, on a ſudden procuring reſt, abating the Cough by ſuppreſſing Expectoration, and through thoſe Narcoticks putting a ſtop to the violent motion of the Animal Spirits, (into which they are irritated by the pungent purulent, or putrid ſlimy matter adhering to the *Bronchia*, or ſides of the *Aſpera Arteria*; for according to what I have obſerved before, the Animal Spirits are the ſole cauſes of all motion in the Humors) the Patient hath ſeemingly been wonderfully recover'd, and felt himſelf at a great deal of eaſe, though in effect, this way of proceeding did conſiderably haſten his Death, (by locking up the matter) which though happning ſo ſuddenly, the Empirick notwithſtanding, finds a way to get great reputation by

by it, only by telling the ſtanders by, that they may plainly obſerve by the great Benefit the Patient received in ſo little time before his death, that had he been called ſooner, in all probability, as they may judge themſelves, he might have cured him. Among the reſt of thoſe Quacks, I knew one, that by many was called the *Conſumption-Doctor*, who did confeſs to me, that his uſual Medicine was what follows. He took of *Penny-royal-water* and *Scabious-water*, of each half a pint, therein he diſſolved of *Oxymel Simplex* (and ſometimes *Oxymel ſcilliticum*) four Ounces, and as much of *Diacodium*, which made a thick Julep, or a thin Syrup; hereof he would cauſe the Patient to take four or five Spoonfuls three or four times in a day. This was the ſame Perſon, and the ſame Medicine, by which he pretended to have Cured one Captain *O Brian* of a Conſumption, which at that time made a great noiſe, and was taken notice of by his Majeſty King *Charles*, as the Treatice, which was written upon it, mentions; though at the ſame time, you are not to conceive this Patient to be otherwiſe troubled, then with a long chronical Cough, occaſioned by Debauches, being without an hectic Fever, nor having his Lungs toucht in any ſort, of which, and his Leanneſs, he was rather recovered by the continuance of a Milk-Diet, and his detainure from Brandy, and other ſtrong Liquors, which had cauſed this Diſtemper, though the giving ſeaſonable Reſt to his Animal Spirits by the ſaid Narco-

tic did also in some measure contribute to it.

17. Air being the life of the Lungs, a Consumption cannot be hoped to be protracted, or palliated, much less cured, without exchanging from a worse to a better, which is most agreeable in a dry, gravelly, stony or sandy Soil; not low, because subject to damps, nor high and mountainous, because exposed to sharp Winds, that are more offensive to the Lungs than Damps, Vapours or Fogs; neither can the Air of any place situate Westward of any great River, Bog, Marsh, Pond, or Moat, be healthful, because the Damps, Vapours or Fogs, that are raised by a Setting-Sun, continue all night, and are not discussed before the Sun-rising the next day.

18. I am fully convinced, that Consumptions in youthful Bodies, strong before their Illness, not being very much depraved in their Bowels by a foul ill habit of Blood, and other Juices (cacochymia) are curable, if undertaken six Weeks, or a month, at least, before their expected end, and opposed by proper Remedies given frequently, and in large Doses; for I have oft observed, that many Medicines have failed in their expected effects by being under-dosed.

19. As for Issues made in the Neck, or Arms, they can bring no relief, in respect of cleansing the Ulcer in the Lungs, or correcting of the putrid Slyme, neither can External Fumigations signify much.

CHAP.

CHAP. X.

Of continual, putrid and malignant Fevers.

1. LOnger Experience hath induced me to recede from my former Opinions in continual putrid, and malignant, I may say, in all sorts of Fevers, where the Blood tending to a dissolution of the mixture (I ought not to say subversion of the *Crasis*, or temperament, being less intelligible) of its constituent parts, namely of its most subtil parts, which are the Animal Spirits from the less subtil, and grosser, or of its sulphurous from the mercurial, and saline parts, may properly be termed Putrefaction, which is not necessary, or constantly observed, to be attended with a stink, as appears in a Gangrene of any part of the Body, that is seldom or never accompanied with a stink; though a Corruption, *Sphacelus*, or Mortification, always is. By this separation the most subtil parts, or Animal Spirits running together, and being accumulated in greater heaps, do move much more impetuously, whereby the said mixture is more and more dissolved every minute. By this acceleration of Motion the natural Heat (whereof Local motion is the sole cause, as appears by attrition, or rubbing any thing for a long time together causes a Heat; or by the quick and

violent motion of Spirits of Vitriol, being affused upon Steel, raising a great heat, is augmented into a greater and preternatural heat, so that the preternatural heat following the dissolution of the mixture, cannot be thought to be the cause (which must precede the effect) but a consequent Symptom, and effect of a putrid Fever, whose Essence therefore cannot be said to consist in a preternatural Heat, or can it so be defined. Moreover, there are some Fevers, wherein no preternatural Heat, quick Pulse, or high-colour'd Urin is perceived, as appears in many malignant Fevers, where the mixture of the Blood is dissolved by a sudden extinguishing, or mortifying the Animal Spirits by venomous Particles commonly admitted from without, or sometimes bred within the Body, which confirms, that a Fever is not a preternatural Heat first kindled in the Heart, whereas its oft kindled in other parts: As for Instance, when an Inflammation of any Bowel, as Lungs, Liver, *&c.* or where any great pain is raised, there the Heat is first kindled, and thence communicated to the Heart, and all the parts of the Body: That there is such a dissolution in the Blood, is evident by the Blood, that is drawn off by bleeding in putrid Fevers, the parts being plainly separated one from the other. So that advising all the Coolers you can imagine, be it Snow-water, Frog-spawn-water, the coldest Spring-water, Whey, sowr Butter-Milk, or Juleps made of Succory, Edive, Water-

Water-lilly, or any other Waters, though inforced with Spirit of Vitriol, Sulphur, Nitre, or Salt, and a Solution of *Sal prunellæ*, they avail ſo little in Fevers, that they are generally found to increaſe them in all the Symptoms, as the preternatural Heat, high and quick Pulſe, deep-colour'd Urin, and the reſt are ſenſibly raiſed to a much higher pitch. Neither doth Bleeding in the leaſt contribute to the abatement of a Fever by cooling *per ſe*, but by ſome other way *per accidens*, as I ſhall endeavour to explain hereafter. That Phyſicians have moſt of 'em, if not all, wholly abandoned preſcribing ſuch ſort of cooling Julleps, as being rather detrimental, and content themſelves with adviſing ſmall clear Poſſet, thin Gruel, *&c.* is an Argument, that putrid Fevers are not preternatural heats, nor are they not primarily caus'd by them.

2. That the Circulation of the Blood in putrid Fevers is too quick, and the Blood too much rarefied, by the too quick motion of the Animal Spirits, is very apparent, and therefore leſſening the Blood by bleeding, muſt alſo leſſen the Circular motion, and diminiſh the Animal Spirits; which being reduced to a moderate meaſure, as may be done by one bleeding or two, is as much as can be expected from that remedy; the Spirits being thereby render'd more free, and the Veſſels more Capacious, are put into a State of performing their Office with more eaſe, in throwing off heterogeneous, and very

offenſive particles, that are got into the Blood, either from without, or bred in the Body. But ſhould you proceed to a Third, Fourth, Fifth, Sixth, and Seventh Bleeding, you will draw off ſo many Animal Spirits, that the remainder muſt be inſufficient to perform their aforeſaid Office, wherein the cure of a Fever doth conſiſt; and ſhould you tap off all, or moſt part of the Blood in the Body, as I fear too many do, and have done out of Ignorance or Stubbornneſs, the Fever would and muſt ſtill continue proportionably in the ſame Vigour and Degree; ſo that this way of proceeding, muſt ſooner kill the Patient than the Fever. As for Malignant Fevers, the moſt Sanguinary Phyſician will ſcarce Adventure beyond a ſingle bleeding, which the more judicious think to be one too many.

3. Glyſters, gentle purgatives, and Laxatives, alſo mild Vomits, uſed ſometimes in the beginning are not look'd upon a Remedies *per ſe*, and directly oppoſite to Fevers, but only helpful *per accidens*, in removing excrementitious Humors, that otherwiſe might annoy the Spirits, and deteriorate the Fever: Neither can Epiſpaſtick or Bliſtering Plaſters be thought to be otherwiſe advantageous, than by ſtimulating the Animal Spirits, (upon which as I intimated formerly, they ſeem to Operate peculiarly) to throw off thoſe heterogeneous and febril particles; for I cannot conceive, any are ſo wanting of Judgment, as to think, that the cauſe of the putrid, or Malignant Fever is in the *Serum*, whereof part is contain'd

tain'd in thoſe Bladders or bliſters, the *Cantharides* have occaſioned.

4. It remains then, that the whole Streſs in curing continual, putrid, and Malignant Fevers, is by moſt of our modern Phyſicians, laid upon ſuch Compounds, as are call'd Cordial and Alexipharmacal Waters, Powders, and Electuaries, alſo ſome Chymical Preparations, as *Antimonium*, *Diaphoreticum*, *Bezoarticum*, *Minerale*, *Spiritus cornu cervi*, *Spiritus fuliginis*, &c.

5. The chief of thoſe Cordial *Alexipharmacal* Waters now moſt in uſe, are *Aqua Theriacalis*, *Aqua Prothericacalis*, (perhaps the better of the two, as conſiſting of fewer Ingredients,) *Aqua Epidemica*, &c. The Electuaries are *Theriaca Andromachi* (which is accounted more temperate than *Mithridate.*) *Theriaca Londinenſis*, and *Diaſtordium*. The compound alexipharmacal Pouders are uſually compiled out of ſome teſtaceous Pouders, as *pulvis echelis cancrorum compoſitus*, and others of Crabs-eyes and Claws, Perl, Oriental Bezoar, burnt Harts-horn, and ſometimes mixt with *Radix Carlina*, *Contrajerva*, *Serpentaria virginiana* (which are the chief) *Dictamnum Creticum*, *Angelica*, &c. By theſe, and the like, as the *Goaſtone*, *pulvis Pannonicus ruber*, its ſuppoſed the Heart is much ſtrengthned, and the Animal Spirits encreaſed, and propoked to throw out the *materia febrilis* by ſweat; ſo that they do eſteem Diaphoretics to be the only true and adequate Remedies, againſt all continual Fevers, as the Phyſicians of the Southern parts do only acknowledge Bleedings.

5. We

5. We are to obſerve, that the Animal Spirits are continually employed, from the beginning of a continual Fever to the declination, in ſubduing the *Materia febrilis*, which is commonly termed a Digeſtion, or Concoction; at the Declination they apply themſelves to the ſeparation, and expulſion of the ſaid febril matter, which in theſe colder Climates is more frequently by Sweat and Urin, and ſometimes by Stool, Hemorrhage, Impoſthumations, or ſome few otherways.

6. If then the chief ſcope is to throw off and expel the febril matter by ſweat, three things ought to be conſidered. 1. Whether Diaphoretics ought to be uſed before the Declination of a Fever, at which time only they appear to be helpful in aſſiſting Nature to throw off; for it muſt be own'd by all experienced Practicers, that the *cauſa febrilis*, be its vitious humours, heterogeneous particles, or what other offenſive matter they are pleaſe to allow, muſt be firſt ſubdued, or digeſted, and ſeparated, before it can be expelled by Sweat; and therefore ſhould you exhibite the largeſt Doſes of Diaphoretics, that Nature can poſſibly bear, and ſecond them by loading the Patient with a number of Bed-cloaths, he will ſcarcely be brought to ſweating; and if peradventure he ſhould happen to be forced into a Sweat in the beginning, augment, or ſtate of the Fever, it muſt be to a very great detriment, by diverting the Spirits from their neceſſary task, and ſqueezing the *ſerum* from the Humours, where-

by

by they are thickned and hardned, which ought rather to be diluted at thoſe Seaſons. Moreover by putting ſo great a force upon the Spirits, they muſt neceſſarily be much divided, diſſipated and inflamed. Secondly, whether Sudorificks given in moderate Doſes, ſo as to be inſufficient to provoke Swear, do not aſſiſt the Spirits by increaſing them, (I mean, ſuch as contain ſome vinous Spirits, as Epidemic, as Treacle-water) and putting them into a gentle agitation, whereby the febril matter may be ſubued, or digeſted. *Vox Medicorum* doth proclaim they do, and therefore they are preſcribed by them from the beginning to the ending of Fevers, in no greater meaſures, than what nature ſeems to require. For my own particular, I can ſcarce believe, that thoſe Spirits are, or can be render'd homogeneous to the Animal Spirits (whatever they are when a Man is in health) being now under a great diſorder, and diſturbance; and as for the other ſubtil particles, that are ſuppoſed to be in the Ingredients of the ſaid Alexipharmacal-waters; how far they are conducing in ſubduing the febril matter, can beſt be prov'd by the ſucceſs, ten dying under the uſe of them, to one that recovers, whoſe Recovery may rather be attributed to the ſtrength of Nature, a due *regimen* in his Diet, and doing him no hurt by improper Remedies. Thirdly, ſuppoſing fictitiouſly, that Diaphoretics were proper, the uncertainty of their Operation would often occaſion a failure of the

the effect that is expected from them. *Purgatives* and *Vomitories* ſeldom or never fail in their operations, if juſtly doſed: But *Sudorificks* and *Diuretics* very oft, though adminiſtred in great quantities. Many quarterns of Plague-water have been drunk for pleaſure at one time by ſeveral that are in health, without the leaſt ſweat following upon it: And as many diuretic Juleps have been ſwallowed by Nephritics, who have not made a drop of Urin the more after them.

7. Wherefore I do much ſuſpect, that there is ſcarce any Remedy uſed, that may be truely termed an Antifebril; though there are a great many that are in common uſe, and yet not commonly known, or acknowledged to be ſuch, which, if well Doſed, and oft exhibited in proper Seaſons, may evidently and ſenſibly be diſcovered by any heedful Phyſician, to ſubdue the febril matter, though but ſlowly, and therefore ought to be began to be given very early, and continued. Beſides theſe, there are other Medicines, which in four and twenty hours do abate all the common Symptoms in a continual and malignant Fever, though even theſe, if applied too late, the Spirits being then almoſt wholly ſubdued, and the febril matter increaſed, and render'd indigeſtible, may fail in their performances. As for the *Peruvian Bark*, I have ſeveral times attentively obſerved, that the continual Fever being under very promiſing circumſtances, hath upon the uſe of it changed ſenſibly into worſe Symptoms in ſix or twelve

twelve hours, ſo that no means afterwards could be applied capable to retrieve that Error.

8. Narcotics are ſeldom forgotten in this Diſtemper, eſpecially where ſo ſeeming a relief is perceiv'd on a ſudden, in the ſudden ſuſpenſion of its Symptoms, by detaining or holding faſt of the Animal Spirits from Operating upon the Febril matter, that cauſeth theſe Symptoms, which ſoon return with a greater fury, upon the letting looſe of the ſaid Spirits, by the diſſipation of the Force of the Hypnotic Medicine. This ſeeming alleviation doth oft incourage the Phyſician to a continuated uſe of Dormitives, throughout the whole courſe of the Fever, the benefit whereof is experienced, not only to conſiſt in a longer delay of death, but alſo in a more certain conſequence of it. Notwithſtanding this great abuſe doth not remove the neceſſary, ſeaſonable and ſeldom uſe of Narcotics, when and where urgent Symptoms may require them.

CHAP.

CHAP. XI.

Of the Stone.

1. THAT the Urin is saturated with *Sal Armoniac*, its distillation doth plainly confirm to us, and that the *serum* of the Blood whereof the Urin doth consist must first contain the same, or else the latter could not receive it; for *nihil dare potest quod non habet*, and consequently that the whole Mass is thorowly repleniſh'd with it, doth also appear from the distillation of Human Blood, which yields a plain Spirit of *Sal armoniac*, little or nothing at all different from the other. That *Sal armoniac* is the most tough Salt of all others, cannot be disputed by those, that have pounded common Salt, *Sal gemma*, *nitri*, or any other Salt, in a mortar, these being the most friably and brittle, and consequently the less unfit singly to be coagulated into a Stone, whereas *Sal armoniac* being so tough and tenacious, especially being mixt with crude slimy mucous dregs, that remain after the imperfection of the Digestion in the Stomach, together with some fabulous Matter of the Blood, I do conceive may easily be coagulated together by a vitious limpid gleet dripping out of the Nerves (as I have already mention'd in one of the preceding Chapters) that are disseminated through, and are terminated in the *parenchyma*, and membranes of the Kidneys.

So

So that the pretending that Slime adhering to the Kidneys, or its inward membrane, is baked into a Stone by a preternatural heat of the Kidneys, like unto Clay baked in a Kill into a brick by the extream heat of a fire, ſeems a Jeſt to me, ſince it cannot be imagined, that any heat of that degree is ever felt by any nephritick Patient, or, if poſſible, could it be endured by him. Moreover their pale Complexions, pale Urin, ſluggiſhneſs, infrequent Urination, or making of Water, are all indications of Coldneſs; add hereunto, that Chryſtal is generally found, and probably bred in the Snow; Rocks, Flints, and other Stones in the Bowels of the Earth, where no degree of Heat was ever perceiv'd. Wherefore what ever extraordinary or preternatural Heat may be felt by Nephriticks about their Loins or Kidneys, is commonly caus'd by Gravel, Stone, or ſome other obſtructing matter, occaſioning pain and conſequently heat.

2. In what part ſoever this Urinous Salt, or *Sal Armoniac* is found, (through want of being ſeparated and expelled by the Kidneys) be it in the Gutts, Urinary-Bladder, Gall-Bladder, Liver, Spleen, Brain, Stomach, Lungs, in the fleſhy part of the Tongue, and of the Kidneys themſelves, alſo about the Joints, though as remote as the extremities of the Fingers, there Stones may be, and have been engender'd, as is atteſted by a multitude of Authors. Some of theſe parts being allow'd by moſt Phyſicians to be of a cold Temperament

ment, as the Brain, Guts, Bladder, *&c.* is a ſecond Argument, that plainly evinces, the Stone is not engender'd efficiently by Heat, though it may ſometimes very conſiderably conduce to it. But to ſay, there is a *Lithopoetic* Faculty, or an innate calculous and fabulous conſtitution in the Kidneys, as is aſſerted by ſo great an Author, as *Fernelius*, ſeems to me very idle; as if he would infer, that none were ſubject to the Gravel and Stone, but ſuch as deriv'd hereditarily a fabulous, and calculous diſpoſition of Kidneys from their Parents: What ſatisfaction there is in the Word *Lithopoetic*, I cannot well apprehend.

3. Before I recede from this ſubject, I ought to anſwer one Objection, *viz.* That there is not always mucous Matter concurring to the generation of the Stone, as appears in the Stone, that is ſometimes found in the Gall-Bladder of a Man, and very oft in that of an Ox, which conſiſting of Gall or choler, cannot be ſuppoſed to have any Slime, Phleam, or Mucus adjoin'd to it, being for the moſt part found ſimple unmixt, and contrary to the Nature of *Mucus*, or Phleam, which is always Glutinous or Viſcous; I allow the whole, and make anſwer, that the Stone in the Gall-Bladder is oft formed by concretion, through the ſeparating or drying away of its thinner and moiſter parts; in like manner Mortar dryeth in ſome time into a Stony ſubſtance; as alſo doth *Tartarum Vitriolatum*, that's made by concretion, beſides many others; on the other hand I muſt tell you

you, I am not the firſt, that hath obſerved the Gall in the Gall-Bladder very Viſcous and roapy, through the admixture of ſome Slime or *Mucus*, that's ſeparated with it from the Blood, and then it will be allowed to be matter very proper for the Formation of a Stone. In the ſame manner a Stone in the Kidneys may be formed by concretion, without the admixture of Mucous Matter, but then the Stone becomes friable, and not very hard, and of a more reddy colour, whereas according to the proportion of Mucous matter, concuring to the formation of the Stone, it becomes hard and pale.

The Stone of the Kidneys is commonly obſerved to precede that in the Bladder; and any Stone, though of a very ſmall dimenſion, falling from thence, through either of the Ureters into the Bladder, is conceiv'd to be the Foundation of one there, which by lying a conſiderable time, doth receive a daily growth from the Urinous Salt, and Slime, that deſcend thither. This in my opinion is not always neceſſary, it being poſſible enough for a Stone to grow in the Bladder, without having the Rudiments laid in the Kidneys; moreover it hath been obſerv'd, that at the ſame time one of the Kidneys, and the Bladder, have each contain'd a Stone.

4. To the formation of the Stone, muſt be concurring. 1. Depauperated or vitious animal Spirits, that are too weak to perform the ſeparation and Expulſion of the abounding *Serum* of the Blood in the Kidneys. 2. A *Se-*

rum

rum too much Saturated with a Sal Armoniac, that's mixt with too much common Salt, which all edibles do contain in ſome proportion, and ſo do Urine, Beer, Whey, and other Drinks; for you are to underſtand, that *Sal Armoniac* is a mixt Salt, conſiſting of common Salt, and a Fuliginous Salt, united together, as appears by the Artificial making of *Sal Armoniac*, which is by mixing a pound of common Salt, to half a pound of Soot, and and boiling them in three or four pints of freſh Urines, to the thickneſs of Hony, which is then to be ſublimed in ſubliming-pots into *Sal Armoniac*. The natural Salt Armoniac is Urin of Chamels, Horſes, or Oxen, concreaced or Evaporated by the hot Sands of *Arabia* into a Salt. 3. A Slime or *Mucus* to Cement the Salt with the 4th, which is Sabulous Dregs of the Blood, 5 narrow paſſages of the Kidneys. So that Salt, Salt-Meats, Pickles, and Spices, are chief materials for the Stone. 6. A Vitious gleet dripping from the Nephritic Nerves, Coagulating the materials together. This is the ſhort Theory I do propoſe to my ſelf, of the generation of the Stone in the Kidneys, which is ſuggeſted to me by practical experience, though I could wiſh, that among ſo great a number of very ingenious Phyſicians we have here in *England*, (who are as capable, as any in the whole Univerſe, though not ſo induſtrious) ſome would take the pains, to detect a more probable Theory of the Stone, and other Diſtempers, which would certainly

certainly prove a great Advancement to the Art of Phyſick, and no leſs Benefit to miſerable Patients. However, as defective and Hypothetical only this Theory may be, it conducts me much more ſucceſsfully in the Practick againſt the Stone, and other Diſeaſes of the Kidneys, than the common Doctrine. I do own, that this and all the other preceding Theoretick Notions might be render'd much plainer, by branching their Illuſtrations into ſo many particular Volumes; but my invincible Averſion to all manner of Prolixity, together with my weak Capacity of rendring them any more than ſcarcely probable, or other than meerly ſuppoſititious, doth entirely diſcourage me from any ſuch Attempt.

The Practical Part of the Stone conſiſts in theſe Particulars; 1. In the Means to prevent the Growing of it. 2. In the Cure of the Stone. 3. In the Removing a Fit, or Paroxiſm of Pains, occaſion'd by the Stone. 4. In the preventing the Return of a Paroxyſm of the Stone, which may be term'd a Palliative Cure.

1. Thoſe that live Sedentary Lives, and uſe little or no Exerciſe, as moſt Students; and Debauchees in ſharp Wines, and very new, or ſtale Strong Beer, are very ſubject, and properly diſpos'd to breed the Stone; but beyond all, thoſe that eat much Salt with their Meat, or feed much upon Fleſh or Fiſh Salted, Smoak'd, or Pickl'd. Wherefore interpoſing moderate Exerciſe between their Studies, and abſtaining from their grave

Thoughts, by intermixing Chearfulneſs and ſober Mirth, to alleviate the Animal Spirits, which are the chief Agents of Health, and, being indiſpos'd, or vitiated, of Diſeaſes. This is one Way to prevent the Stone in the former; And exchanging ſharp Wines into milder, and diluted with a light thin Spring-Water, and uſing them with a *quantum ſufficit*, and a total Abſtinence from Stale Beer, ſubſtituted by Small Ale, will produce the like Effect in the latter. To drink Wine at Meals, as it lays a Foundation for the Stone, ſo uſing Small Drink in its ſtead prevents it: And in my Opinion, pure Wine ought not to be drunk, according to the Rules of Health, before the Chylification is finiſh'd, and the Diſtribution at hand, unto which it may be very aſſiſtent. A Fiſh-Diet moiſten'd with too much ſharp Wine, and a Bread and Cheeſe-Diet, ſeldom fail of adminiſtring ſufficient Matter for the Stone. In ſhort, Keeping the Stomach clean, in the manner as hath been before deſcrib'd, is the chiefeſt Way and Means to prevent breeding the Stone.

2. The Cure of this Diſeaſe is commonly attempted by Bleeding in the Arm (though ſome judge it more advantageous in the Foot) in Bodies, that are moderately replete, to make room in the Veſſels, which the ſubſequent Laxatives and Purgatives will neceſſarily require, as working by Fermentation, that will occaſion a Rarefaction of the Humours, and conſequently a Diſtenſion of the Veſſels, which otherwiſe might cauſe ſome Local Diſturbance

ſturbance of the Stone, or occaſion a Paroxyſm of Nephritick Pains. Among the Laxatives, *Caſſia Fiſtularis* newly drawn over the Steem of a Decoction, made of Emollient or Diuretick Vegetables, is made choice of as a ſacred Remedy, either by it ſelf, or mix'd with Rhubarb and Cream of Tartar, or *Diaſenna*; which is oft ſuſpected, becauſe the *Scammony*, that is an Ingredient in it, is accounted too rough, as cauſing too high a Fermentation, or Ebullition; or *Pulvis Senæ comp. maj.* or *Pulvis Sen. comp. min.* This is judg'd neceſſary to be repeated once or twice, at convenient Intervals; which, as I have try'd more than once, I have always found, not to reach the Morbifick Matter, and therefore am oblig'd to make uſe of ſuch Additions, that ſhould penetrate without any Hazard of putting the Spirits upon a Ruffle. This being premiſed, the Saxifragers, or Stone-breakers, are to be introduc'd, with this Election and Preference, That thoſe, which have an extraordinary Character ſtamp'd upon them by great Authors, or Phyſicians, ought only to be recited; for, ſhould they all be enumerated here, to which the Faculty of Stone-breaking is attributed, a Quire of Paper would be inſufficient to contain them, there being no Diſeaſe in the whole Body of Man, againſt which ſo many Simple and Compound Remedies (in all manner of Galenical and Chymical Forms) of Vegetables, Minerals, and Animals are recommended, as againſt the Stone; for I do believe I never met with a Phyſician, Apothecary, Sur-

geon, Empirick, Midwife, or any Old Woman, that had not an infallible Remedy against the Stone and Gravel.

But before I make mention of any of these Stone-Grinders, it will not be amiss to enquire by what Quality, Vertue, or Means it is expected by Physicians, they should perform this great Work of Breaking the Stone in the Kidneys and Bladder. Some endeavour to effect it by Medicines, that have a Corroding Quality, by which insinuating into the Pores of the Stone, tear all asunder, and dissolve it, in like manner as *Aqua fortis* dissolves Silver, Copper, and Tin; *Aqua regia* Gold; and Juice of Limons, and distill'd Vinegar Crabs-Eyes, Pearl, Coral, *&c.* To this purpose, for Corroding and Dissolving the Stone, are recommended *Spirit of Vitriol*, *Sulphur*, *Salt*, *Nitre*, and *Juice of Limons*. I have experienc'd most of these in the Cure of the Stone, and ever observ'd, that within less than an Hour, they would certainly put the Patient into an horrid Fit of the Stone-Cholick, besides the Pain in the Back; against which, an Emollient Laxative Clyster, with the Exhibition of a gentle Narcotick at the end of its Operation, gave present Relief; and glad I was to come off so. That a few Drops of any of those recited Spirits, well diluted with a Parsley or Fennil-water, and sweeten'd with Syrup of the five Opening Roots, being thus obtused, and afterwards broke in their Vertues, by passing the Stomach and other Parts, and carrying thence some slimy Particles to blunt them more,

more, ſhould at laſt, upon their Arrival to the Kidneys, be endu'd with a Force ſufficient to crack a hard Stone, is very wonderful. But to clear the Point, pour Spirits of Vitriol upon Steel, as it is directed in the Preparation of *Vitriolum Martis*, theſe readily entring the Pores of the Steel, whoſe Figures are adapted to receive them, move very quick and impetuouſly, piercing through the whole Body of the Steel in a very few Minutes, whereby not only a very great Heat and high Ebullition are occaſion'd, but the Sulphurous Particles, that ty'd the Salin together into a Body, are totally expell'd; as you may perceive by the great Stink attending of them in their Evaporation; and the Remainder is turn'd into its Firſt Principle of Vitriol. In like manner the Spirits of Vinegar, or of Juice of Limons, piercing into the adapted Pores of Bezoar-ſtone, Pearl, Coral, Crabs-Eyes, Egg-ſhells, Oyſter and Muſſel-ſhells, Crabs-Claws, and the like, by the quick and violent Motion of their moſt ſubtil pointed Particles, cauſe an Heat and Ebullition, and chaſe out the Sulphurous connecting Particles; whereby nothing is left in the Vinegar but a Tartar, (*Limus*, or *Fæx*,) and if waſh'd, may be call'd a *Calx* extinct, though honour'd by Chymiſts with the Name of *Magiſtery*; that is, after the Precipitation with Oil of Tartar, and the ſweetning of it with ſeveral Lotions of warm Water; which in reality, is no other than a *Terra damnata*; and among thoſe recited, I take the Bezoar-ſtone to contain the fineſt

Earth; and next to that the Perl. As for the reſt, I look upon them all as equal.

2. Now if you can ſuppoſe the Pores of a Nephritic Stone in the Body, to be adapted in Figures, anſwerable to receive the pointed Particles of the Spirits of Vitriol, Salt, Nitre, Tartar, Vinegar, or Limons, you may reaſonably believe, there is a Virtue and poſſibility in theſe Acids, of diſſolving the Stone in the Kidneys or Bladder, notwithſtanding that they are not taken in ſo great a quantity, as almoſt to corrode, and that they do not arrive in their full force to thoſe remote Places; yet their frequent Repetitions, and long continuance of them, under a milder Virtue, will anſwer their improportionable doſing, and accompliſh the ſame effect: So that if this ſuppoſition were true, as it is moſt certainly falſe and erroneous, you are not to apprehend, that thoſe Acid Stone-breakers were to perform that Work, in the time almoſt that you may crack an Apricock Stone, as moſt of theſe Medicine-mongers and Empiricks pretend to do, in twice or three times taking. But to ſubvert your Suppoſition, and conſequently to divert you from loſing your labour in the uſe of Acids, I need only to alledge to you, that they are in no wiſe ſhaped in the figures and dimenſions of their Particles, proportionable or adapted to enter the Pores of a Stone bred in the Kidnies or Bladder, as you may eaſily make trial, by pouring of Spirits of Vinegar, (I mean, Vinegar twice or thrice diſtilled)

Juice

Juice of Limons, or ſimple water acuated with ſuch a proportion of Spirit of Nitre, Salt, or Vitriol, as to bring it to ſuch a degree of ſharpneſs, acidity, or virtue, as Spirit of Vinegar, or Juice of Limon is; for above that degree, no Acid can be taken into the Body, without corroding the Stomach) upon an indifferent hard Stone, taken out of the Bladder or Kidnies, which being incloſed in a Matraſs with its blind Head, and placed in a warm Sand Bath for Twenty Weeks together, at the expiration of which, you may take out the Stone, ſo far from being pierced by the Acids, that its grown much harder than it was before. But what is more, ſhould you pour the ſtrongeſt *Aqua Fortis*, or *Regia*, or Spirit of Vitriol not diluted upon it, and let it ſtand as long as you pleaſe, the Stone will come out harder than it was put in. As Gold and Silver cannot well be reduced, or diſſolved into a *Calx* by ignition, but by amalgamation, and immerſive (as the Chymiſts term it) Calcination by corroſive Acids; ſo on the contrary, the Stone that's bred in the Bladder and Kidnies, cannot readily be diſſolv'd into a *Calx*, by an immerſive Calcination, but by Ignition.

3. That all Acids (*Quatenus* Acids, and *per ſe*) are Enemies to the Nerves, nervous Parts, (as Membranes, Tendons. *&c.*) and to the Animal Spirits, common experience doth atteſt; whence it is, that moſt Men, upon only taſting of a very ſour thing, being Potable or edible, are apt to make ſour Faces, and to ſhiver,

* *Becauſe the Sulphur, that tyeth the conſtituent parts of the Stone together, can only be conſum'd or deſtroyed by fire, whereas no acid will, or can attempt upon Sulphur.*

shiver, or to undergo small Tremblings all over, (which are small concussions of the Nerves, Tendons, and circumvestient Membranes of the Body) by pricking of the Membranes; and though this Pricking in tasting of any very sour thing, is only perceiv'd by the Nerves and Membranes of the Mouth, it is nevertheless felt all over by the continuity and contiguity of all the Nerves, nervous Parts, and Membranes of the Body, like unto two, or more unison Fiddle strings, whereof one being touch'd, causeth the same sound in all the others; or like unto a Cord that's extended, which when smartly struck at one end, makes the whole Cord shake as far as the other end; whence I do infer, that what ever expulsion, whether by Vomiting, Stool, or Urine, (and sometimes *per accidens* sweat) is occasion'd by the force of Acids, is by pricking, stimulating, or irritating the Nerves, or nervous parts, by their rigid Pointed Particles, and a faculty, (which all Acids possess, contrary to all fuliginous and armoniac Salts) of precipitating of them, and consequently throwing of them down the Ureters; and therefore I doubt not, but that in some kinds of suppression of Urine occasion'd by the Stone, Gravel, *Mucus*, Crumbs of Blood, and at some seasons, Acid Medicines may be of great use, among which, I do in my opinion prefer this following.

℞. *Aceti Vini albi Gallici destillati, (vel si mavis, succi Limonum, vel citri, cujus posterior*

ſteriorisusus præſtat) ℥j. *Ol. amygdal. dulc. rec. extract.* ℥ß. *probe & diutine cum Saccharo candi vel Saccharo Altheæ.* ℈ß. *triti. vin. alb. gall.* ℥iiij. M.

This proves very diuretick in many, and that by ſtimulation, as I have ſaid before. But its obſerved of Juice of Limons, that if frequently uſed, its apt to cauſe a Thruſh in the ſtomach, by its too ſharp, or rather ſomewhat corroding quality, occaſioning ſometimes Vomiting, or a violent Looſeneſs, for which reaſon the Juice of Citron is preferred, conſiſting of an acid not ſo acute, and yet not leſs diuretic. However, White-wine Vinegar diſtill'd is experienced to excel either of them in the diuretic Faculty, and many others, as being much more penetrating, and conſiſting of Particles more ſubtil and Volatil. Though Vinegar is vulgarly reputed a potent reſtringent, yet it cannot deſerve that denomination ſo much as Spirit of Salt, Nitre, Juice of Limons, or the acid of Tamarinds; and to ſpeak the truth, it cannot properly be term'd Adſtringent, which is a quality that's binding, purſing, (drawing together like a Purſe) and contracting, proceeding from auſtere Particles, ſuch as are perceived in Allom, Juice of Slows, and the like; but nothing reſembling that, can be diſcover'd in Vinegar, no more than in Juice of Limons, or Spirit of Salt. True it is, that all Acids cauſe an Aſperity or Roughneſs by their acute Particles, pricking the Nerves

Nerves and Membranes, that are nervous expansions, which by a sort of resistance rise up into those minute Points, * thereby endeavouring rather to expel and throw out; whereas the others by their Austerity, though occationing a Roughness, yet it is such, as doth detain, and bind in whatever they contain: What is in Vinegar, but an Acid Spirit, united to an Acid Tartar, melted as it were *per deliquium* into a moisture or Liquor? Vinegar is so far from binding, that it renders any thing, to which its united, more piercing, expulsive, and solutive also, as appears in *Sal Tartari Seignetti*. *Colocynthis* steep'd in Vinegar, is render'd much more purgative, than when macerated in Brandy or Wine. Three Grains of *Laudanum Opiatum* taken to cause Sleep, and drinking upon it a Draught of any Julep, that contains an Ounce of distill'd Vinegar, or only as much *Oxymel Simplex*, shall occation a deeper Sleep, than if ten or twelve Grains of *Laudanum* had been swallow'd, whereout probably some would never awake again. Others upon drinking of sour Beer, (being of the same nature as Vinegar) are immediately put into Gripes and Looseness. However I will not be positive in this, or scarce in any thing else; but to me, the Adstringent quality in Vinegar seems a vulgar Error of some Ages.

* *Like unto a Goose-skin.*

That Acids (excepting those that are meerly Austere) are the chief and most proper Medicines (I will not say certain, for they don't prove always so) for Expulsion, and pro-

promoting or irritating the *Expultrix* Faculty efficiently in the Animal Spirits, and Inſtrumentally in the Nerves and Membranes, may be Inſtanc'd in Vinegar, which in a greater quantity provokes Vomiting, in a leſſer, Stools and Urin, and Sweat in thoſe that are diſpoſed. It is certain, that *Prophylactic* Waters made by Infuſion, and not diſtillation, being commonly well impregnated with Vinegar, and *Acetum theriacale* are imcomparatively more ready and potent in half the proportion, in promoting Sweat, (which alſo is by expulſion) than Treacle-water, (wherein is contain'd only the Phlegm of ſome Acids, the heavier and ſtronger part not coming over the Helm in diſtillation) *Aqua Epidemica*, or *Pretheriacalis*. One Dram of *Virginian ſerpentary*, being macerated in Vinegar, ſhall raiſe a quicker and more copious Sweat, than three Drams infus'd in Wine or Brandy. *Cream of Tartar*, and *Tamarinds*, by their pungent Acidity, move the Expultrix Faculty of the Guts to Stools. *Juice of Limons, Citrons, Oranges, Spirit of Tartar, Nitre and Salt*, prompt the Kidnies to expel Urin, *&c.*

4. *Spiritus tartari*, *Nitrum tartariſatum*, and *Tartarum Vitriolatum*, are by moſt that have made tryal of them, accounted the moſt powerful of Diuretics. But there being ſo offenſive an empyreumatic ſtink in the Spirit of Tartar, proceeding from a remaining Admixture of ſome lixivial Earthy Particles, imperceptible to the Eye, whereto the *Empyreum* is almoſt inſeparably adherent, cauſeth

its

its use to be much neglected, which however may be removed, by mixing the Spirit with fine wheaten Flower into a Paste, and that equally mix'd with the *Caput mortuum* of Vitriol, and so drawn off twice or thrice in a Glass retort; or mixing the Spirit of Tartar with *Colchotar*, i. e. *Calchantum rubefactum*, and drawing it over once or twice in the same manner; wherein you need not to fear, that any Vitriolic Spirit will mix with it, in regard that the degree of heat, that will be sufficient to raise the Spirit of Tartar, is not by much intense enough, to force out the Spirit of Vitriol. After all, a pure *Acetum destillatum* is not much inferior to it.

5. By what means those Magisteries of Crabs-Eyes, of Mussel-shells, Egg or Oyster-shells, operate those pretended effects of forcing down Urin, and breaking the Stone, is my next business to enquire. It is commonly concluded, that whatever drives down Urin forcibly, doth break the Stone by oft dripping upon it, like the dropping of a Gutter falling oft upon a Stone under it, doth by length of time make a hole into it. *Gutta cavat Lapidem non vi, sed sæpe cadendo.* It is then infer'd, that those recited Magisteries are potent Diuretics, (which my little experience doth wholly contradict,) but whether they do their work by cutting, hammering, or dissolving the Stone *tota substantia*, ought to be consider'd. It cannot be pretended, that in those Magisteries, and particularly in that of Crabs-Eyes, there is any thing

thing beſides a fine Earth, the acid Particles of the Vinegar, having entirely driven out the ſulphurous Particles of the Crabs-Eyes, and ſeated themſelves in their rooms and Pores, which they had left; ſo that you are not to apprehend, that the Vinegar is thereby ſweetned, becauſe the Alcalious Particles (which in them ought not to be ſo call'd, for they are not ſuch) are mortified or broken, and thereby the Liquor, wherein the acid Particles were, remains inſipid; no, this is quite otherwiſe; for the ſame acid or Vinegar Particles are ſtill in being, having only chang'd their place; for put the whole ſolution together, *viz.* the inſipid Liquor, and impregnated fine Earth of Crabs-Eyes into a Glaſs retort, and being placed in a Sand Furnace, you will by diſtillation with a ſmart heat, have your Vinegar return'd to you again, not at all, or imperceptibly little impair'd in its ſharpneſs, or leſſen'd in quantity; ſo that this pretended *Magiſtery*, *Solution*, *immerſive Calcination*, or what elſe you are pleas'd to call it, is nothing elſe, but a concentration of the Spirit of Vinegar, in the entirely deſtroy'd Crabs-Eyes, which being waſh'd off from the ſaline acid Particles of the Vinegar, or firſt being precipitated by the inſtillation of Oil of Tartar, and afterwards waſh'd with repeated lotions of warm water, is left not worth a ſtraw, and fit for nothing but to make a very indifferent *Fucus*, or Colmetic, which that of Egg-ſhells doth by much excel. Wherefore Crabs-Eyes by Triture

upon

upon a Porphir reduc'd to an Impalpable Powder, and exhibited in a convenient Vehicle, do in a Moment remove that troublesome Symptom, improperly call'd the Heart-burning, by admitting the acute Particles of the almost corroding acid Liquor (floating in the Stomach, and vellicating its Nervous Tunicks) into their minute Recesses, whence the Sulphurous Particles were so suddenly chas'd; and if upon this the Patient takes twelve or fifteen Grains of pure Crystallized Salt-Petre, (not *Sal Prunella*,) in a Draught of Barley or Milk-water, at a few Minutes distance, he shall perceive the Crabs-Eyes, with the contain'd corroding Particles, sensibly precipitated into the Guts.

6. Crystallized Nitre is certainly the most wonderful Salt of any, and the most active and potent Diuretick, or Piss-driver, of all the whole Catalogue. It is a Salt entirely consisting of Sulphurous Spirits or Particles, concenter'd or clos'd up in a very little Saline Matter: Its Activity and quick impetuous Motion is beyond all others, except Mercury; for no sooner can you touch your Tongue with it, but immediately its subtile piercing Particles enter the Pores of the Moisture residing in the spongy Recesses of your Tongue, and of the Spittle about it, which they divide, attenuate, expand, and dilate, or rarefie so very quick, that your Mouth seems to run over with Moisture in an Instant. This Nitre, or Crystal Mineral, being taken in a proportionable Dose, in a sufficient quantity of a suitable Vehicle, doth

doth ſoon after rarefie, attenuate, and tumefie all the Humours, Liquors, Seroſities, and Moiſtures it meets with in the Stomach, and other Bowels and Paſſages, whereby the thinner Parts are ſeparated, thruſt forward, ſqueez'd, and expell'd towards the Kidneys, and thence to the Ureters and Bladder; ſo that I have not yet found any thing comparable to it for a Piſs-driver. That I do prefer it thus unprepar'd before *Sal prunellæ*, is, becauſe by the melting and inflaming *Sulphur* upon it, a great part of the moſt active and penetrating Spirits, and moſt ſubtile Particles are driven out, and conſequently much enfeebl'd. But perhaps you may reply, That their crude Particles are by the inflaming of the Sulphur expell'd, and the Nitre thereby digeſted; which is all fantaſtick. Beſide this extraordinary Virtue, theſe Cryſtals Mineral have a Power ſo ſurpriſing in the Thruſh of the Mouth, Internal, and External Inflammations, and many other Diſeaſes, that 'tis a great Wonder to me, it is no more taken notice of in Phyſick.

7. To return to the Remainder of Enquiry into the Manner and Ways, whereby theſe Virginal Earths of the aforeſaid Teſtaceous Magiſteries do drive down Piſs; upon the ſtricteſt Search my ſlender Capacity can make, I do not find any thing to attribute that Faculty unto, except to little cutting pointed Sands of thoſe Earths, that by pricking the Membranes of the Stomach, Guts, and other Parts, they ſtimulate them; and by Contiguity, and Continuity of Parts, ſtimulate all the Mem-

Membranes of the Body to expel looſe, ſeparated, and floating Seroſities to the Kidneys and Ureters. That by pricking one Membrane, you do, as it were, prick all the reſt, appears in the Inſtances above-written, of a Touch upon a Cord extended, or a Sound made upon one Uniſon; or by the pricking of the Membrane of the Tongue by any very ſowr Taſte, all the Membranes of the Body ſeem to be affected with the ſame little Punctures, as appears by ſudden ſmall Shiverings all the Body over; as likewiſe, in another Inſtance of the Bladder, which oft, upon having made Water newly, the Air from without preſſes into it, to fill up the *Vacuum* in ſome meaſure, whoſe Nitrous Particles wherewith it is repleted, do prick the Membranes of the Bladder; upon which, a ſudden Shivering (which is an Attempt or Endeavouring of Expelling) happens all over the Body, by the propagated Senſe of pricking to all the Membranes.

8. 'Tis in this reſpect, that Glaſs being powder'd, is alſo recommended for a potent Diuretick, by reaſon of thoſe acute cutting or pointed Particles, that are ſuppos'd to be in it, which pricking and ſtimulating (being likewiſe accompany'd with Weight, that contributes very much, and therefore ought to be adminiſter'd in greater Quantities, than are uſually given) the Tunics of the Stomach impel Seroſities to the Kidneys in manner before expreſs'd. Upon the ſame Conſideration it is, that *Lapis Judaicus*, *Lapis Nephriticus*, *Lapis Spongiæ*,

Spongiæ, Medlar-ſtones, and probably Peach and Apricot-ſtones, Mountain-Cryſtal, *Lapis Lyncis*, little Stones that are found in the Stomach and Gall-Bladder of an Ox in the Month of *March*, in the Liver of a Wild-Boar, in the Head of a Perch, and in the Throat of a Carp, and the Stones that are taken out of the Kidneys and Bladder of a Man, and indeed all other hard Stones, that being reduc'd to a Powder, do ſtill retain ſome acute cutting Particles; for if any hard Subſtance be finely palveriz'd, and afterwards grinded into an Alcool, or impalpable Powder, upon a Porphir, ſo as all the Points of the Minute Particles are obtuſed, and entirely broke, it loſeth all its Diuretick Virtue. Wherefore it is, that the Magiſtery of Crabs-Eyes, and other Teſtaceous Bodies are ſo far from being Diuretick, that they prove Emplaſtick, and conſequently putting a ſtop to all manner of Expulſion. For the Reaſons alledg'd I am of Opinion, that Crabs-Eyes, Coral, Bezoar, and the reſt of Teſtaceous Bodies are deſtroy'd by all manner of Preparations, (whether in order to Magiſteries, Tinctures, Salts, or Deliqueous Oils,) except moderate Pulveriſation, which renders them more ſuſceptible of Acid Salts, whereof the Moiſture or Liquor being diſrobed, now ſerves for Increaſe of Serous Matter, that is to be expell'd to the Kidneys for the Matter of Urine, or the Ambient Pores of the Body for the Matter of Sweat, whereunto the Membranes are ſtimulated by the Acid Spirits, wherewith the Teſtaceous Powders are impregnated

9. Among the pre-cited Stones, Dogmatists pay the most Respect to the *Nephritick Stone*, and *Crystal*; which latter, when brought into a Powder, by how much it retains more hard, subtile, acuated and pointed Particles, so much the more it is adjudged to exceed Glass in a Diuretick and Saxifragous Quality, both operating in the same manner, and by the same means. As for the *Nephritick Stone*, there are such wonderful Stories recorded of it, that I am almost asham'd to offer the Recital of them; and at the same time, am surpriz'd at the unlimited superstitious Belief of Mankind: Before I proceed, I ought to give you some Description of it, that you may not be impos'd upon by a false one. The best of these Stones are brought from *Turkey*, and the *Spanish West-Indies*, which they call *Iziada*; though some slight ones are sometimes taken up in some Parts of *Bohemia*, *Spain* and *Carniola*. Others are of a very considerable Weight and Bigness. They are fine Stones to look upon, of a dark green Colour, clouded, though some are of a lighter Green; the Surface feels always greasie. 'Tis reported by some, that this *Nephritick Stone* being grinded into a fine Powder, or prepar'd probably by Calcination, or making it red-hot in a Fire, and afterwards quench'd in strong Vinegar, whereby it is easily reduc'd into a subtile Powder, and given to the quantity of a Dram and an half, in Fennil or Parsley-Water, doth in a Moment remove the violent Pains in a Fit of the Stone; and being taken three or four times,

times, doth in a wonderful manner diſſolve the Stone into a Slime, Mud, Gravel, and Crumbles, as they pretend to inſtance in the perfect Cure of abundance of Nephriticks in *Germany*, where their Wines, and the common Exceſs in drinking of them, do in abundance of People breed Stones in the Bladder and Kidneys. They add further, That if it be given in too large a Doſe, or taken too oft, it breaks ſo faſt, that the Mud and Gravel, into which it is diſſolv'd, come down ſo faſt, that they are apt to dam and choak up the Ways, as containing too little Room to give Paſſage to ſo much Rubbidge.

10. But the Excellency of this *Lapis Nephriticus* conſiſts more in the External Uſe of it, than Internal, the various Narratives whereof appear wholly incredible. Authors tell you, That being worn on the Wriſt, many have been cur'd by it, who could not receive the leaſt Benefit from any other Internal Medicine. Another Author tells you, That by wearing a piece of this Stone about the Neck, next the Skin, a Perſon that was miſerably troubl'd with the Stone, which though ſtubborn to all manner of Remedies, yet in a ſhort time was ſo diſſolv'd into Gravel, that was not only avoided at the Bladder, but by the Corners of the Eyes, through the Pores of the Skin by Sweat, and by Stool alſo. The ſame Author confirms the Truth of this, by the like Succeſs upon a great many others. *Monardes lib. de occult. Medicam. propriet.* adds, That a certain Dutcheſs, whom he names, had undergone

dergone three Fits of the Stone in a ſhort time; but upon wearing Bracelets made of this Stone, ſhe had been freed of them for ten Years together. The ſame Author reports further of a Noble-man, that was afflicted with the Stone; who, upon the wearing the Nephritick Stone about his Arm, was uſed to throw off ſuch vaſt quantities of Gravel, that he was forc'd ſometimes to leave it off, for fear the avoiding ſo much at a time might do him ſome Hurt. The Excellencies of this Stone are farther diſplay'd, by their producing ſeveral Inſtances of Perſons, that have been cured of otherwiſe incurable Catarrhs, or Defluxions of Rheum upon the Lungs, of Dropſical ſwell'd Legs, of any ſort of Suppreſſion of Urine, and of Ædematous Swellings in other Parts; all which was effected by expelling Urine in great quantities: And as a Proof that all this was to be attributed to the Virtue of this Stone, they tell you, That upon leaving off the wearing of it, thoſe Diſtempers would return, and as ſoon ceaſe again, as the Application of the ſaid Stone was renew'd. They further add, That ſometimes it would move Stools as violently, as if caus'd by a ſtrong Purgative. But one great Inconvenience they mention the wearing of this Stone is attended with, *viz.* of cauſing a very troubleſome Itching all over the Body; which would at any time be remov'd by leaving off the Stone for two or three Days, but return again upon the Re-application.

11. Chy-

11. Chymists set no less Value upon the Stone, that is taken out of a Man's Bladder or Kidneys, and is call'd by them *Ludus Paracelsi*; the Preparation whereof consists only in calcining it with a vehement Fire into a Salt, and letting it turn into an *Oleum per Deliquium*, by standing in a Cellar, or other damp place. Whatever Vertue may be suppos'd to be in the aforesaid Stone, is to be attributed to the *Sal Armoniac* that is in it; which, whether it be not destroy'd by Calcination, may justly be doubted; and therefore, the Urine newly made by an healthful Young Man, using Wine, doth seem to be endu'd with a greater Diuretick and Stone-breaking Power: To which purpose, I have known several Nephriticks have chosen to take several Draughts of their own Urine (as having an Aversion to that made by others, who possibly may be diseas'd of some foul Distemper, or other) for many Days together, with good Success: For which Reason, Physicians do rather chuse to recommend Goats Urine, which is impregnated with much more *Sal Armoniac*, than that of any other Animal; and herein they all agree, being thereto induced by the manifold successful Experiments upon Nephritick Patients, that it excels all other Diuretick and Stone-breaking Medicines. The aforesaid Urine must be saved, by tying a Bladder to the Goat. Others prefer the Blood of a Goat dry'd, as not only containing a great quantity of *Sal Armoniac*, but its other Particles being dry'd, are harden'd into Cut-

ting Acute Sands. Both the one, and the other, ought to be us'd in large Doſes, frequently repeated, and continu'd for ſeveral Weeks, if any great matter is to be expected from them.

12. In Concluſion, my Opinion touching the Virtues of thoſe pre-numerated Stones is, That Flints being render'd brittle by Ignition, and Extinction in Water, or Small Beer, or Wine, wherein a good Lump of *Sal Armoniac* hath been diſſolv'd, and afterwards grinded into Powder, taken in large Doſes, in a Draught of the ſame Liquor wherein it hath been quenched, may be endu'd with a far greater Power to drive down Urine, Slime and Gravel, and diſſolve the Stone by a long continuated Uſe, than any of the moſt celebrated of them.

Becauſe thoſe that are troubl'd with Gravel or Stone, are almoſt perpetually upon dribbling, which is increas'd by all ſorts of Moiſture they can or do drink, whether binding, ſtopping, attenuating, laxative, or endu'd almoſt with any Quality, be it ever ſo contrary to the Stone, or Gravel; for it all runs to the Kidneys, as being the Parts affected, (as I ſhall further explain below:) And for that Reaſon, almoſt every thing is by the Phyſicians call'd Diuretick, tho' operating by Qualities wholly repugnant to that ſort of Evacuation. Hence it is, that *Porcelane* (tho' adſtringent, and binding, and conſequently, contrary to a Diuretick) is in *Conſil. Cratonis* mention'd, to expel the Stone to a Miracle; and by *Rondeletius* ſaid to break the

Stones

Stones of the Kidneys. And *Knot-Graſs*, as aſtringent as it is, is by *Matthiolus Com. in 4 cap. lib. 4. in Dioſcorid. Solenander*, and *Mizaldus Cent. 4. Diſtinc. 4.* aſſerted, to expel the Stones of the Kidneys and Bladder. Alſo, *Rupture-wort*, no leſs binding, and reſtringent, is highly recommended by *Rondelet in Conſil. 150. Craton. Geſner*, and *Quercetan. in Pharma. reſt. cap. 10.* for a moſt effectual Plant to break the Stones in the Kidneys. And *Moſs* that grows on the Ground, a potent Reſtringer, is by *Durandes in Hort. Sanitat. Heurnius*, and *Lonicerus*, mention'd to be a certain Stone-breaker. *Plantane*, that noted Adſtringent, by Mr. *Ray*; and *Oaken Leaves*, a greater Adſtringer, by *Platerus*; and *Cinquefoil*, by *Seroder*, are recommended for Diureticks, and Stone-breakers; beſides many other Adſtringents that can be nam'd. Moreover, it may be taken notice, that moſt other Vegetables, Animals, and Minerals are highly commended, tho' ſpecifically appropriated to ſome part or other: As, among Cephalicks; *Pyony*, by *Trallianus*, *Dioſcorides*, *Durandes*, *Lonicerus*, and *Fernelius*; *Betony*, by *Galen* and *Matthiolus*; *Calamus Aromaticus*, by *Taberna Montanus* and *Solenander*; the Rind of a *Bay-Root*: And among the Pulmonicks, or Thoracicks; *Maiden-Hair* and *Carduus Benedictus*, and all other kinds of Thiſtles; *Eryngo*, *Figs* and *Liquoriſh*: Among the Cordials, *White Dittanmun*, and moſt (if not all) Aromaticks or Spices, which you may find mix'd in the celebrated Compound Diuretick and Stone-grinding Electua-

ries, and distill'd Waters: Also among Splenetick, *Tamarisk*, *Spleen-Wort*, *Roots of Capper*, *Mugwort*, and others, among the *Emmenagoga*; most of the Hepaticks; among the Anti-Scorbuticks, all, or as many as can be found, tho' more particularly, *Black Radish*, and *Horse-Radish*; all the Vulneraries, chiefly *Golden-Rod*, and *Speed-well*; besides a great Number of Miscellanies, appropriated to several Bowels, and particular Diseases; as, *Birch-Tree*, *Guaiacum*, *Dropwort*, *Grass-roots*, the five opening Roots, and their Seeds, *Burnet*, *Saxifrage*, *Horse-Mint*, *Samphir*, *Ashen-tree-wood* and *Bark*, the Juice of *Birch-tree*, *Nettle*-Juice and Seeds, *Valerian*, *Orris*, *Elicampane*, *Bramble-roots*, *Soapwort*, *Bastard-Rhubarb*, *Asarabacca*, *Wake-Robin*, *Baise*, *Onions*, *Squills*, *Garlick*, *Cabbage* and *Colewort-leaves*, *Lovage*, *Garden-Madder*, *Birchwort*, *Rasharrow*, *Featherfew*, *Penny-royal*, *Tansie*, *Origan*, *Spignel*, *Poley*, *Calaminth*, *Hyssop*, *Pellitory*, *Germander*, *Groundpine*, *Vervain*, *Southernwood*, *Strawberry-leaves*, *Willow-leaves*, *Water-Germander*, *Wild Thyme*, *Skirrets*, *Chamomil*, *Lark-spur*, and *St. John's-wort-Flowers*; besides abundance of other Roots, Leaves and Flowers, which by one approv'd Author or other are all esteem'd Diureticks, and Stone-grinders; as well as all Carminative Seeds, *viz. Parsley*, *Fennil*, *Cummin*, *Anis*, *Dill*, *Carui*, *Daucus*, *Cardamom*, *Marsh-Parsley*, *Lovage*, *Seseli*, *Gromwel*, *Parsnips*, *Macedonian Parsley*, *Broom-seeds*, *Coriander*, *Garden-Cress*, *Basil* and *Fennel-Flower*, the four greater and lesser cold Seeds,

of

of *Mallows*, and *Marſh-Mallows*, *Cotton-ſeeds*, *Linſeed*, and *Fænugrick-ſeeds*, *&c.* *Lupins*, all manner of *Vetches*, *Millet*, *Red Cicers*, *Bay* and *Juniper-Berries*, *Berberries*, *Winter-Cherries*, *Hipps*, *Bitter Almonds*, *Peach*, *Apricot*, *Cherry*, *Plumb*, *Walnut*, and *Hazel-Nut Kernels*. Among Gums and Roſins; *Gum-Elemi*, *Arabic*, *Dragant*, *Olibanum*, *Bdellium*, the Gum of a Cherry, and Plumb-Tree, *Gum-Lac*, *Therebinthin*, *Amber*, *&c.* Among the Animals; the Aſhes of an Hedge-Hog, of an Hare, of Swallows, of an Aſs's Liver, of the Feathers of a Gooſe and a Ring-Dove, and of Earth-Worms; the Skull of a Man, powder'd; the Jaw-bone of a Pike, and the Parings of an Horſe's Hoof, powder'd; Mouſe-Dung, ſeven or nine for a Doſe; Pidgeon's Dung, Pullet's Dung, Sow's (*Millepedes vel Aſelli*) Graſs-hoppers dry'd, Beetles, the Powder of an After-Birth dry'd in an Oven, the inward Skin of a Cock's Maw dry'd, the Guts of a Swan, the Powder of a young Pidgeon dry'd in an Oven; the Powder of the Bird Wagtail, dry'd by the Smoak of a Chimney; the Aſhes of a Troglotite Sparrow, (of which abundance of Authors ſpeak Wonders;) the Blood of a Fox, drunk warm, as it comes out of the Veins; the little Bone taken from the hinder Knee of an Hare, (greatly extoll'd by *Foreſtus* and *Fernelius*;) *Cantharides*, which ſome Authors tell you, may be given in a total and long-continuated Suppreſſion of Urine, cauſed by the Stone, which if not remov'd, the Patient muſt die; and therefore

as a deſperate Diſeaſe requires a deſperate Remedy, ſome that have more Courage than Diſcretion, have adventur'd to give it in a Doſe, from half a Fly, unto a whole one, powder'd, in a Draught of Clarify'd Whey, Emulſion of the four greater cold Seeds, or Skimm'd Milk once boil'd up, and grown to be luke-warm, with very ill Succeſs; for conſidering, that the Patient's Strength is reduced to a very low and deplorable State, before it is adminiſter'd, if peradventure the venomous Medicine hath wrought through, ſo as to ſtrain or ſqueeze out ſome Drops of Urine, which appears bloody alſo, it hath left ſuch a painful burning Strangury, which, with the Addition of the Nephritick Pains, and Defect of Spirits, hath ſoon put an end to the miſerable Sufferer; ſo that it had been better to let a Man die, than to kill him: But where that Medicine doth not paſs, it doth infallibly torture the Patient out of his Life. However, if any be fond of the Uſe of them, they muſt either toaſt them, and half, or wholly calcine them into Aſhes, which then will have entirely diveſted them of their Diuretick Faculty, no other Virtue remaining in them, than what is in the other Aſhes; or calcine them by Corroſion, which is diſſolving them in Spirit of Salt, or Nitre, whereby their venomous Quality is much infring'd, and the Diuretick in a great meaſure preſerv'd. The Toaſting is in holding them over an hot Fire in an Earthen Pan, and there ſtirring them, until they fall almoſt into

to

to Powder, which doth greatly abate their Venom, together with ſome part of their Diuretick Power. In the ſame manner Beetles (*Scarabæi*) may be ſerv'd, being not very much inferiour to the afore-mention'd *Cantharides* in their Piſſing Faculty. The Caſe being well conſider'd, where Diureticks exhibited in large Doſes, and frequent Repetitions, do not anſwer the End, 'tis moſt certain, the true Cauſe of the Suppreſſion of Urine is miſtaken; and conſequently give what you pleaſe of that kind, it will prove unſucceſsful; for a very ſmall Remedy, if it hits the Cauſe right, doth ever bring ſudden Relief; and therefore in ſuch Caſes, we ought to uſe our greateſt Induſtry, in enquiring what other Cauſe may in all probability cauſe ſuch a Suppreſſion, and not perſiſt in an Opinion, the firſt Appearance of the Diſtemper hath put us in. *Cantharides* may be an uſeful Medicine externally apply'd, but a very ſuſpicious one internally given. I do remember, I have ſeveral times made Trial of infuſing two Drams of them in a Quart of *French* Brandy, and being filter'd through a Paper, have given thereof, from one Spoonful to two, in Clarify'd Whey, or Ptiſane, againſt inveterate virulent Gonorrhæa's, but I could never find I advanc'd much in the curing of them.

I have here got together a large Catalogue of *Diuretics* and *Lithontriptics* in Simples, yet it is not a compleat one; for upon a further ſearch of Authors, it may be increas'd to double

double the Number, ſo that as far as I obſerve, no leſs than the whole internal *Materia Medica*, even the addition of Purgatives and Vomitives, (which ſeldom move Stools without provoking Urin) cannot be ſufficient to make up a full and compleat Liſt of Piſs-drivers and Stone-grinders. The cauſe of increaſe of ſo great a Number of theſe, I can aſſign to no other, than to an incautelous Credit Phyſicians have given to all ſorts of People, that upon pretence of being troubl'd with this or that ſort of ſuppreſſion of Urin, Strangury, or other ſymptoms of the Stone, have declar'd a relief they received from this or that Remedie, though never ſo contrary, improbable, or prepoſterous (as you may perceive by the aforeſaid recital of Simples, and other Compoſitions thence fram'd), without examining the bottom, the poſſibility, or probability, and manner of acting of ſuch like Remedies, in reſpect to the Indications, that ought to be taken from the Diſeaſe it ſelf, the Cauſes thereof, the Symptoms, and chiefly from the *Actio læſa* of the Kidnies, which cannot well be performed, without the true knowledge of the Function or Action of the Kidnies, and their *Modus agendi*, which (and indeed the Function of all the Bowels, and the *Modus agendi*) in my weak opinion is ſlubber'd over, or at leaſt very inſufficiently diſcourſed, ſo that its ſcarce poſſible to give any good Judgment of it. In order to that, I ſhall preſume to ſet down ſome Poſitions, which (to ſpeak modeſtly) you may pleaſe only

ly to take for Suppoſitions. 1. That the Antecedent cauſe of a *Leſa mictio* is very oft in the Kidnies, and conſequently that the cauſe of a total or partial ſuppreſſion of Urin, a Strangury, a *Diabetes*, (which is an *Auctа mictio*) *Ardor Urinæ* and other Symptoms are in the ſame part. 2. The Office or Function of the Kidneys being chiefly the ſeparation, and excretion of the *ſuperfluous ſerum*, all, or moſt liquid or potable Matter, that's admitted into the Body more, than is neceſſary for the Blood to be ſupply'd with, doth naturally and by Inclination (if I may ſo ſpeak) flow, and tend or is impell'd by the Spirits, or (if you like the Expreſſion better) by the parts of the Body to the Kidnies, eſpecially if in any wiſe preternaturally affected; the reaſon is, becauſe the Spirits (I mean the Animal) chiefly flowing to ſuccour any part that is in diſtreſs, and they being the only and chief impulſors of all the Humors in the Body, it muſt follow, that all Potables, be they adſtringent, groſs, thick, thin, ſharp, ſweet, ſowr, or indued with any other quality, muſt be impell'd to that part, whither the Spirits flow moſt, which muſt be to the Kidneys, if preternaturally affected. Hence it is then, that Phyſick Authors obſerving all manner of Simples and Compounds being either potable of themſelves, or given in any thing that is potable, do provoke Urine in thoſe, whoſe Kidneys are any wiſe preternaturally affected, have taken in ſo many hundreds of Simples and Compounds, , to the almoſt innumerable

ble Number of *Diuretics* and *Lithontriptics*, tho' far from being to be eſteem'd as ſuch, either by Reaſon or Expetience; for to aſſert that Adſtringents (as many of the reputed *Diuretics* are) do move Urin otherwiſe, then Medlars do Stools (*per accidens*) *comprimendo*, cannot be thought reaſonable: And daily Experience doth prove, that many *Diuretics*, that are ſuppos'd to be properly ſuch, are taken in large quantities, by thoſe that are in Health, without adding a drop of increaſe to their ordinary meaſure of Urin, as appears by thoſe, that have continu'd the infuſion of *Millepedes* in their Drink for a conſiderable time, and in others that drink great quantities of *French* and *Rhemiſh* Wines, without any proportionable increaſe, and ſometimes ſcarce piſs before the next day, which, as I ſaid heretofore, renders the operation of *Diuretics* very uncertain; whereas other Evacuatives, as Vomitories and Purgers, have a more certain operation in moſt Bodies.

As to the *Modus Agendi* of the Kidnies in their Function, I cannot imagin, that the *Serum* is ſeparated from the Blood in their *Parenchyma*, *colando* (as it is commonly expreſſed by Phyſicians) by being ſtrained thro' their narrow paſſages, as if it were by a Sieve; becauſe the *Serum* is ſo throughly perfuſed and mix'd with the Blood, which in many bilious Conſtitutions is as thin, if not thinner than the *Serum* it ſelf, that conſequently the Blood muſt paſs with it, which would always occaſion a bloody Urin. So that there muſt be

be another ſort of ſeparation, conceived by me, to be efficiently performed by the Animal Spirits, which you are not to apprehend to be ſingly floating in the Nerves, like Air in a Bladder, but that they are contain'd in a moſt ſubtil piercing *Lympha*, as may be perceived by the wound of any Nerve, which gives occaſion to the ſaid *Lympha* to drop out, and is then call'd a *Gleet* of a Nerve. This Spirituous *Lympha*, that's perfuſed through the Body of the Kidneys, doth by its moſt piercing ſubtil Particles, coagulate the more ſulphurous and glutinous Particles from the abounding ſalin Armoniac, (that are diſſolved in the *Serum*) which by having ſome repugnancy and contrariety againſt them, it doth, together with the *Serum* precipitate down the narrow Chanals of the *Parenchyma* of the Kidneys to the Ureters, whence by ſtimulation, and their own weight, they are moved to the Bladder. That the aforeſaid Function is performed *efficienter* by the Animal Spirits, is proved by ſeveral Inſtances of the ſame Import, *viz.* ſome may remember many Years paſt, I Publiſh'd a Treatiſe, Intitl'd the Caſe of a *Nobleman* (then) *lately deceaſed*, wherein was given an account of a puncture of a Nerve in the *Plexus Nervorum*, that's near the Groin, occaſion'd by the wound of a Sword, that paſſed ſlaunt thwart the *Abdomen* down thither, upon which a copious Gleet enſued, and ſoon after among other direful Symptoms, a ſuppreſſion of Urin. This thoſe Phyſicians, as Learned and Famous

as they were, could impute to no other cauſe than the Stone; but they were deceiv'd by their Conjectures, as appear'd plainly afterwards, upon the defection of the ſaid Nobleman's Body after Deceaſe; his Kidneys, Ureters, and Bladder being found clear of all manner of obſtructions, either by *Mucus*, Gravel, or Stone, though the Kidneys were exceedingly waſted, and ſhrunk into a muchleſſer Demenſion, than commonly is found in Men. Upon this fatal Miſtake, and conſequently wrong Indications, the forementionʼd ſix Phyſicians did very boldly preſcribe the moſt powerful of *Diuretics* in very large Doſes, and long continuated frequent Repetitions; until by chance, one of their Medicines having a power beyond their Expectation did give a check to the Gleet, that by derivation had deprived ſo great a proportion of nervous *Lympha*, (wherein the Animals do reſide) from the Kidneys, as not to leave a ſufficient quantity in them, to make ſeparation of the ſalin Armoniac *Serum* for Urin, which therefore ought rather to be called a ſuppreſſion of the *Serum* in the Kidneys, than ſuppreſſion of Urin, and ought not to receive that Name, before its arrival into the Bladder. But what follow'd? The Animal Spirits being return'd to their former Function, and meeting with a great quantity of *Serum*, (that had not been ſeparated during the long interval of ſuppreſſion) mix'd with the Blood, that was extreamly attenuated and fuſed by the preceding Diuretics, they ſeparated and excerned

excerned ſuch a profluvious torrent, as caus'd a moſt violent *Diabetes*, which by my preſcriptions was removed in a very little time. Further more you are to take notice, here was not only an abolition, or at leaſt a diminution of the ſeparation of the *Serum*, or Urin, as it is improperly called, but an *Atrophia*, or defect of nouriſhment in the Kidnies, cauſed through want of the ſpirituous *Lympha*, or animal Spirits; ſo that as I hinted in one of the former paragraphs, theſe are the efficients (*cauſæ efficientes*, but inno wiſe *materiales*,) of nutrition, ſeparation, and excretion of all the parts of the Body. Add to the former Inſtances ſeveral others of the Gleets, I have before and ſince obſerved, occaſion'd by the cutting thro' of Nerves in a Wound, and punctures of Nerves in the Arm upon unskilful Bleedings, which though they did not effect ſo intire a ſuppreſſion, as the puncture of a Nerve near the Kidnies, yet they have cauſed an evident diminution of Urin, and an *Atrophia* in that part, into which they were inſerted.

Several other ſuppreſſions of the *Serum* in the Kidnies I have now and then met with, that were miſtaken for ſuppreſſions of Urin, occaſion'd by the Stone, to the fatal ruin of the Patients, among which I have given an account of one very remarkable in a Treatiſe called, *The Art of curing Diſeaſes by Expectation*. I ſhall here make a ſhort diſcourſe upon the *Ætiology* of the before-cited Diſeaſe, wherein the uſe I make of the *Hypotheſis* late-

ly ſet down touching the *modus agendi* of the Kidnies in the ſeparation and excretion of the *Serum*, will plainly appear. The Patient there mentioned was of a healthful robuſt Conſtitution, and fleſhy habit of body, much on Horſeback, and ſcarce at any time long ſedentary; his Appetite was much to ſalt Fiſh, Pork, Beef, Cheeſe, and other ſubſtantial Food. His Blood upon phlebotomy in the Arm appeared florid, thick and glutinous, with very little *Serum*. He felt conſtantly from the beginning of his Illneſs a weighty pain about his Loins, and pulſatory alſo; his Urin was pale, crude, dreggiſh and turbid, made at pretty long intervals, and in very ſmall quantities, becauſe the *Serum* was not, neither could it be ſeparated in the Kidnies: For his Blood being engendred out of a thick glutinous Chyle, and this out of groſs, glutinous Aliments, muſt neceſſarily be reſinous, or thick and glutinous, and conſequently as impoſſible and unfit to mix with an obtuſe *Serum*, as Rain-water with Therebinthin, unleſs ſomething be added to the Water to render it piercing, whoſe ſharp points may divide, cut and inſinuate into the pores of the viſcous Reſin. Though the Patient did drink great quantities of Liquor of one kind or another, the greater part of the *Serum* it produced, was thrown out by inſenſible perſpiration, and very oft by copious Sweats, whilſt a ſmall proportion would crowd into the Kidnies, and yield matter for that little Urin that was made. This glutinous, thick

and

and fibrous Blood muſt be impelled through the Extremities of the emulgent Arteries with great difficulty, and very ſlow, and with greater difficulty, and ſlowneſs into the extremities of the emulgent Veins, whereby a fullneſs and diſtention muſt be occaſioned, that cauſed the weighty obtuſe and pulſative pain in the Loins, through the defect of a juſt and ſufficient Circulation, which could not but raiſe great diſtentions in the hypochonders, unequal pulſations, and other Symptoms, too many to be here diſcours'd of by retail. From no other Remedies, but ſuch as obtain a power to remove that clammy, ſtringy Conſtitution of the Blood, could any benefit be expected; though on the contrary, improper lithontriptic diureticks were adviſed, impelling the Blood more into the Kidneys, and cramming them, whence the pain increaſed, and the *Serum* was more damm'd up, until at laſt the Patient being injudiciouſly ſent to the Bath, thoſe hot acidulous Waters inwardly taken, put a quick period to the whole matter.

Neither is it always a want of ſalin armoniac *Serum*, or defect of its permixture with the Blood, that are the cauſes of a ſuppreſſion or abolition of the ſeparation and excretion in the Kidnies, is evident in an *Aſcites*, or Dropſie, where there is ſalin *Serum* in abundance, and ſo thorowly mixt, that the Blood is but little thicker than Water, and ſo little glutinous, that the leaſt drop will ſcarce ſtick to any thing; yet notwith-

ſtanding very little *Serum* is evacuated by the Kidnies into the Bladder, which redounding therefore ſo much in the Veſſels, is thrown into the Legs (which are then improperly called *pedes œdematoſi*) thighs, *ſcrotum*, or the capacity of the Belly. So that the ſuppreſſion of Urin, as its commonly termed, is the moſt frequent cauſe, and which moſt Phyſicians do agree unto,, of an *Aſcites* and *Pedes œdematoſi*, ſucceeding a long Ague, Chronical *cachexia*, Jaundice, continuated debauches of Brandy, or other ſtrong Liquors and great Hæmorrhages. Though in moſt ſorts of ſuch Dropſies, the moſt potent of ſuppoſed Diureticks are uſed, and lixivial Remedies, as Lies of Broom-aſhes, and others taken to exceſs, yet no more Urin, but rather leſs is expelled, and the Dropſy increaſed. In ſome of theſe caſes, I have known monſtrous hydropical Swellings reduced by a month or two's drinking of the *Bath* Waters, which, at proper Seaſons of the Year, a Courſe of *Spaw* would have perform'd in leſs time. The cauſe of this kind of ſuppreſſion can only be imputed to the Animal Spirits, or the ſpirituous *Lympha* being vitiated. But in regard that this ſubject, together with the examination of its Remedies that are no leſs numerous than thoſe againſt the Stone, would take up too much room I choſe to reſerve it to another time.

Among that *farrago*, and mixt heap of Diureticks, and Lithontripticks, there remains I ſhould reduce them to a more choice and ſelect

ſelect number, ſuch as are chiefly in uſe, and moſt celebrated among Phyſicians, and afterwards give you my ſlender Opinion upon their *modus agendi*, or manner of Operation.

The Roots of the moſt approv'd are the five opening Roots, but more eſpecially *Perſly*, *Reſtharrow*, *black Radiſh*, and *Horſe-radiſh*; among the Leaves, *White Saxifrage*, and *Burnt Saxifrage*; the chief Seeds, Berries, and Fruits, are, *Grumwell-ſeeds*, *Burdock*, *Broom*, *Daucus*, *Perſly*, *Fennil*, *Anis*, &c. *Winter-cherries*, *Hipps*, and *Juniper-berries*, more particularly *Red Cicers*; In the number of Animals, *Millepedes*, or *Sows*; and among the Stones, Salts, and Minerals, *Ludus*, or the Stone taken out of a Man's Kidnies, or Bladder, *Goats Blood*, and *Goats Urin*; *Lapis Judaicus*; *Cineres leporis combuſti*, *vitrum uſtum*, *ſal ſuccini*, *ſal prunellæ*, and *Tartarum vitriolatum*.

The principal of the moſt famed Compoſitions are *Electuarium Lithontribon*, and *Electuarium Juſtini*, the deſcription whereof you may read in *Cordus* and *Wecker's* Diſpenſatories, being a rude and unaccountable empirical hodg-pot of abundance of Carminative Roots and Seeds, ſome deobſtruent Roots, moſt ſort of Spices, ſome Gums, *&c.* as ill proportion'd, as may be.

Among the Magiſtral Compoſitions, by this following Syrup *Horatius Augenius* doth affirm to have cur'd Six Hundred of the Stone, which is above Five Hundred Ninety and Nine more, than I do believe.

℞ *Rad. Saxifr. Ruſc. Eryng. Leviſt. Onon. Alth. Gram. Fen. Petroſ.* ā ℥ß. *Raphan. ſylv.* ℥ij. *fol. Beton. Pimpin. Alth. Urtic. Paleg. Naſturt. Calam. Polygon. Min. Pariet.* ā m. i. *fruct. Alkek.* N°. xx. *Sebeſt.* N°. xv. *cort. rad. Lauri* ʒiij. *Sem. Ocym. Bardan. Petroſ. Dauc. Seſel. Mil. Solis* ā ʒij. *Uvar. paſſ. liquir,* ā ʒvj. *Capil. Ven. Polytric.* ā m. i. *Coq. S. A. in Aq. Capil. ven.* ℔x. *in duplici baſe ad* ℔vj. *e quibus cum Sacchar. fin.* ℔iiij. *& Mell. deſpum.* ℔ij. *f. ſyr. perfectæ coct. & aromat. Cinam.* ℥j. *& Nuch. Moſch.* ℥ß. m.

Montagnana recommends the following Electuary to that degree, that he doth avow, there can be no Stone, which by it cannot be broke, and grinded into Sand.

℞ *Sem. Apii, Petroſ. gran. Mil. Sol. Rad. Saxifr., Pelii Mont. Ariſtol. rot.* ā ℥j. *Lap. Spong. Judaic. Lync.* ā ʒjß. *Vitri combuſt. Sang. Hirci præp.* ā ʒiij. *liquirit. pulv.* ʒß. *Oxymel. compoſ. Sacchar. alb.* ā ℔ß. *Acet. Scillit.* ℥ß. *M. pro Electuario.*

The five Opening Roots, Graſs-Roots, Carminative Seeds, with other Roots, Barks and Seeds like them, are ſuppos'd to contain a ſubtile hot Spirit, or ſubtile moving Particles, which by putting the Animal Spirits upon a quicker Motion, do by attenuating and rarefying the Blood, ſeparate the *Serum* from it, and conſequently make Matter for the Urine, which

which being driven down, acquires them the Name of Diureticks, that can no otherwiſe deſerve the Title of Stone-grinders, than by ofent dripping by or upon Stones, may in Length of Time make little Holes into them, and render them brittle.

The *Millepedes* containing a ſubtil acidulous Spirit, are thought not only by precipitating the *Serum* to be very diuretic, but alſo by piercing into the Pores of the Stone, whoſe Figures ſeeming to be adapted for the reception of thoſe acid pointed Particles of the Sows, become thereby Stone-breakers. But conſidering their preparation, they are not only thereby deprived of thoſe few ſubtil acid Spirits, that fly away by the drying of them in an Oven, or otherwiſe, which is one way of preparation; or are wholly deſtroyed in their Subſtance and Virtue, by the other way of preparing them, which is, by waſhing them well in Reſt-harrow-water, next ſoaking them throughly in *Spaniſh* Wine, which being poured off, they are to be put into an Earthen Pot or Pipkin, very cloſely cover'd and ſtop'd, and then to be dried in an Oven after the Bread is drawn, which if it be not done with a very mild heat, and ſeveral times repeated, they will be apt to be ſtewed, and never fit to be reduced into Powder; others do chuſe after waſhing of them in White-wine, to diſſolve them in Spirit of Vitriol, whereby not only the Spirit of Vitriol is obtuſed and impaired, but the acidulous ſubtil Spirit of the Sows amortiſed.

This ſolution is pretended to diſſolve the Stone in the quantity of five or ſix Drops, given in Perſly-water, or ſuch like Vehicle. In my Judgment *Millepedes* need no other preparation, than waſhing the dirt and ſlime off them with fair Water, after which they are to be but juſt broken, or very little bruiſed in a Stone Mortar, and about the number of two or three hundred put into a Matraſs or Bolt-head, and pouring three Pints of White-wine upon them; the Glaſs Veſſel being cloſely ſtop'd, they are to ſtand 24 Hours, and the Wine is to be filter'd off, the Remainder is to be dried in an Oven in an open Pipkin, and then reduced to Powder; hereof from Two Scruples to Four may be taken in nine or ten ſpoonfuls of the impregnated Wine. That this will prove diuretick to thoſe, that are Nephritick, is oft obſerv'd, though I have known them taken, being bruiſed and ſteeped in Ale, for their ordinary Drink, for a quarter of a Year together by thoſe, that were troubled with running Eyes, dimneſs of Sight, Bloodſhed, and Inflamations of the Eyes, Dropſies, Jaundice, Phthiſick, and other Diſtempers, without any abatement of thoſe Diſeaſes, or cauſing more Urine than ordinary; ſo that People need not be ſo ſcrupulous in their Doſe in any other Diſtemper, but that of the Kidneys, whither they, as all other Diuretics, are apt to carry all groſs ſlimy Humours, they meet with in their paſſage. Many will put ſeven or eight of 'em in a Mortar, bruiſe them into a maſh,

and

and pour a Glaſs of White-wine upon them, and drink it off without ſtraining. Others hang four or five hundred of them in a Linnen Bag in a Firkin of Ale, and after a Fortnights Infuſion, drink the Ale for their ordinary Drink.

From a pretended Obſervation, that Goats Blood will break the hardeſt of Stones, which is a Diamond, moſt Phyſicians prefer it beyond all other Lythontriptics, adviſing it to be taken warm, as it comes out of the Veins: this requires ſome further preparation according to the Sentiments of Vulgar Authors, which is feeding a young Goat with Perſly, Fennil, Carrot and Parſnip Tops, Cabbage Leaves, and the like ſuppoſed Diuretics, for three Weeks or a Month about the Spring; though others prefer the Autumn, near the Vintage, at which time a Goat is apt to feed much upon Grapes, if he can come at them, whereby they think his Blood is render'd the more diuretic, and cutting. Being then killed, they prefer the Blood, that comes out of his Veins, about the middle of his Bleeding, before that which flows out firſt or laſt. No Blood of any Animal doth ſooner coagulate in the Air, and dry into a hard, brittle, and ſandy ſubſtance. On the contrary, the Blood of a Stag only will not coagulate at all, but continues fluid. Now whether the Blood of a Goat being drunk warm, will not ſo coagulate in the ſtomach, as to occaſion a great weight, pain, and indigeſtion there, whereas the Blood of a Stag conſiſting of more Volatile

Latil piercing Salts than any other whatſoever, cannot coagulate, by reaſon of the ſaid copious Volatil Salts, which at the ſame time will render it the more diuretic, and piercing: ſo that two Drams or more of Stags Blood warm, as it comes out of his Veins, with four or five Ounces of Goats Urine, will make a more potent Medicine, than any of that kind. Many in a Fit of the Stone, and the Cholick thence cauſed, by drinking their own Urine (which is much worſe than that of a healthful Young-Man) have ſuddenly removed both to a wonder, and continuing the uſe of it Mornings and Evenings for ſeveral Days together, have render'd the Stone brittle; but this ſort of Urinous Draught is attended with a great inconvenience of taking away the Appetite, and weakning Digeſtion. Beyond all doubt the Urin of a Fox is ſtronger, and more piercing than any of the before mentioned, as feeding chiefly upon Blood and Fleſh, which abounds much more with Volatil Armoniac Salts, than moſt ſorts of Herbs.

As for Alcalious Salts, or ſuch as are by Fire render'd lixivial, as the Aſhes of ſeveral Animals, their Hair and Feathers, alſo Dungs, and ſeveral Chymical Salts of Vegetables and Minerals, operate by an abſterſive ſtimulation, and ſhrinking or contracting the Veſſels, whereby they propel the Humours, and precipitate thoſe that are acid: But all lixivials are experimentally found to abate the Appetite, and extremely diſturb the digeſtion of the Stomach.

The

The red Cicers (which are no other than red Peaſe, and little different in ſubſtance and taſte from Common Gray Peaſe) that are in ſo high eſteem for moving Urine, perform it no otherwiſe than by a flatuous Spirit, whereby they diſtend the Bowels and Veſſels, and rarefie the Humours contain'd in them, that are forc'd forward to gain more room; which is no more than what a Decoction of Tares, and moſt ſorts of Vetches, Peaſe, Horſe-Beans, and Cabbage can, and ſome of them do effect in a more powerful manner.

It is to be further obſerv'd, that all Diuretick, of what kind ſoever, muſt be uſed with the higheſt Caution in the Stone, Gravel, or any kind of Suppreſſion of *Serum*, or Urine, leſt by forcing and bringing down groſs Humours with them, they cramb and choak up the Paſſages more than they were; for which Reaſon they are rarely preſcrib'd ſingly, or in great Doſes, and frequent Repetitions, in a Fit of the Stone, Gravel, or Suppreſſion; but either mix'd with thoſe Remedies, that have a Power by their Mucilaginous and Unctuous or Balſamick Particles, to ſmooth, relax, widen, and render the Paſſages ſlippery; as, Oil of Sweet Almonds and Linſeeds; Mallows, Marſh-Mallows, Pellitory of the Wall, Bear's-Breech, Violet-Leaves, Borrage and Bugloſs; or giving ſmall Doſes of the milder ſort of them, and ſeldom, *&c.* And in a Fit, they chuſe to confine themſelves only to Mucilaginous and Emollient Medicines; alſo to Balſamicks, as Therebinthin, *Lucatellus*'s Balſam,

ſam, Balſam of *Tolu*, of *Peru*, *&c.* by Mixture with ſome other Balſamicks, or gentle Diureticks, made into Boluſſes, Electuaries, or Pills, and ſometimes Elixirs, and Tinctures; at Intervals adviſing Clyſters, Emollient and Carminative, and now and then Narcoticks; alſo Half-Baths, up to the Middle, and whole Baths, beſides Bags and Cataplaſms.

The Prevention of the Return of Fits conſiſts in gentle proper Purgatives and Laxatives, follow'd by proper Diureticks; Mineral-Waters, whether wholly Diuretick, as the Sulphurous Waters at the *Bath*, *Sunning-Hill* near *Windſor*, *Heywood-Hill* near *Totteridge*, *Iſlington*, *Richmond*, *Aſtrop*, *Deptford*, *Henden*, and other Waters; or both Purgative and Diuretick, as *Dulwich*-Waters, *Barnet*, *Epſom*, *Chigwell*, *Pancras*, *Acton*, *Peſcot-ſtreet* at *Windſor*, *Stretham*, *&c.* operate by Quantity, Weight, and Stimulation, ſome by Fermentation and Rarefaction, and others by Quantity, Weight, Stimulation, Fermentation, and Rarefaction.

To conclude the whole Matter, I could never yet, among all theſe fore-mention'd Remedies, find any beyond proper Oleous Balſamick Volatile Elixirs, and Tinctures; and theſe ought to be framed of Ingredients as various and different, as the Cauſes of Suppreſſion of Urine, and Generation of the Stone and Gravel in the Kidneys, may be ſuppoſed.

CHAP.

CHAP. XII.

Of Madneſs.

1. I muſt own, that among the whole Catalogue of Diſeaſes, nothing ſeems more abſtruſe, and inexplicable, than that Preter-natural Diſpoſition of the Brain, that is attended with a Madneſs; either without a Fever, as a *Mania*; or with a Fever, as a *Phrenitis*; or any ſort of *Delirium*, as a *Paraphrenitis* with, or without a Fever, which doth affect the Brain only ſecondarily, and *per Deuteropatheian*, as the two former do primarily, and *per Protopatheian*. In all theſe are *Læſa* the *Imaginatio*, *Senſus Communis*, and *Memoria*. The Manner or *Modus* of their Læſion cannot well be underſtood, without firſt apprehending the manner, how they are perform'd in their natural State, which is the great Difficulty, that neither all my Reading, nor the Meanneſs of my Capacity can remove. I am apt to conceive, there is properly called (without any Neceſſity of terming it Analogous) a Senſitive Memory, Common Senſe, and Imagination in all Animals, in ſome more, greater, or more exquiſite, and of greater Power, than in others. A Dog ſeeing a piece of Meat held to him, at a greater diſtance than he can be ſuppos'd to ſmell it, the *Idea* or Impreſſion which at another former time

the

the ſaid piece of Meat, or ſomething like it, made upon his Sight or Smell, is an Argument of Memory, or elſe would no more run at it, than to a Stone, or a Logg; the diſtinction he makes, that it is neither a Stone or Logg, or any thing elſe, but a piece of Meat, ſignifies he hath common Senſe, and many Dogs though they are not hungry, and cannot eat it, they will run at a piece of Meat, or a Bone, carry it away into ſome retired place, and there bury it, whither they will repair, to dig it up and eat it upon the return of their Hunger, all which implies evidently, they are endu'd with Memory, common Senſe, and Imagination; which appears plainer, when a Dog hath been obſerv'd ſometime to bark, walk about, return to the place he left, and do ſeveral other Actions as if he were awake, in his Sleep, cauſed by Impreſſions or *Idea*'s made in his wakeful time, that move his Animal Spirits when ſleeping; the variety of which motion excited by thoſe impreſſions, imply Imagination, Common Senſe, and Memory, which is further confirm by the Madneſs or *Mania*, Dogs, Hogs, and other Beaſts, feeding upon Carrion and corrupted Food, are ſubject unto, depraving their internal ſenſes, ſo as to commit Violence to all Creatures, they formerly were familiar with: And laſtly their ſenſitive Paſſions, (ſo termed in diſtinction to thoſe, that are excited by the intellective or rational Faculty) as Love, Fear, Anger, hatred, is a ſign they do know, and diſtinguiſh, which are

Acts

Acts of the Internal Senſes. The Love of a Dog is eaſily perceiv'd by his Fawning, his Fear is diſcover'd by the holding a Stick at him, his Anger by biting, and his Hatred, which is a continuated Anger, by his Aggreſſing of Cats, Rabbits, Bears, Bulls, *&c.* And among all Beaſts, the exerciſe of the Internal Senſes, and Senſitive Paſſions is moſt remarkable in an Elephant, as may be obſerved in the ſeveral wonderful Relations, very credible Authors do make of them. For a little digreſſion the affinity of the Subject puts me upon this Query, Whether a Maniac or a Madman biting another Man, or a Dog, may not have the ſame Influence upon the Man, or Dog that's bit, in cauſing him to go Mad, and occaſioning an *Hydrophobia*, as the biting of a Mad Dog has upon a Man, a Dog, or a Hog? Though it be probable, that the venomous bite of either is reciprocal, yet I never heard it confirm'd by experiment.

Without aſcending ſo high as the Intellective Faculty, comprizing the Rational Memory, Common Senſe, and Imagination, I ſhall for the preſent endeavour to ſatisfie my ſelf in the *Modus* of theſe ſenſitive, or Animal Internal Senſes, by the following Notion. I will ſuppoſe, that all external Senſation (of the external Senſes) is performed by an Impreſſion, or rather Preſſure, made by the ſenſible external Object upon the Senſory or Organ immediately, and mediately by that, upon the ſenſitive Nerve, be it Seeing, Hearing, *&c.* Or it may be conceived thus;

Senſation

Senſation is the perception of any ſenſible Object: All Pereeption is by Contact: All Contact is by corporeal Impreſſion, and Impreſſion by local Motion. Here ariſeth an Objection, that its not likely, that a viſible Object at fifty or threeſcore Leagues diſtance, as the Peak of *Tenariff*, ſhould reach ſo far, as by Contact, Impreſſion, and local Motion, to affect the *Tunica Cornea* or Sight; or that the fixt Stars, Which are more remote beyond all Compariſon, ſhould reach the Eye, ſo as to make a corporeal contact upon it. The Anſwer contains no difficulty, if you will ſuppoſe that no obſect is viſible by it ſelf, but by light or *Lumen*, and that *Lumen* is a circular Emiſſion or Emanation of luminous Particles from *Lux* (which in reference to the precited Inſtances is the Sun) and is extended as far above the Sun probably, as it is to us below it. The Interception of the ſaid luminous Particles by colour'd, figur'd and quantitative Bodies, and their being by them in the Interception modified and determined, do thence reach to our Eyes. And why ſhould not Light be as diffuſive, or diſperſive a Body as Air, (filling ſo vaſt a Region as it doth) being much more ſubtil than it, as paſſing through every pore of it? Light hath quantity, *viz.* Longitude, Latitude, and Profundity as much, and as properly, as Air, or any other Body. Being condenſed by a thick Convex Glaſs, it hath Weight or Gravity, as might be experimentally found, were the Glaſs artificially weighed) No leſs than Air con-

condenſed in a Retort by a Pump. Light rarefies the Air, which Darkneſs condenſeth. The Light, and Colours, which are only Modifications of the Light, (for without Light, all things are dark, and of no Colour,) make a Preſſure upon the External Tunick of the Eye, (conſiſting chiefly of the Filaments of the Optick Nerve, whence it is this Membrane or Tunick becomes the moſt ſenſible of any in the whole Body, ſcarce enduring the ſofteſt Touch of any external thing without an exquiſite Pain,) which is very perceptible to thoſe, that look againſt the Light of the Sun; this being continuated to the Optick Nerve, and thence to its Beginning, is what I underſtand by Sight.

But here an Objection may be offer'd; *Quicquid recipitur, recipitur ad modum Recipientis.* The Senſitive Nerves, as the Optick, Auditory, *&c.* being all of one Compoſure, Conſtitution, or Temperament, and the Spirits that actuate them, being all the ſame, muſt receive the Impreſſion of Senſible Objects all alike, and after the ſame manner; and conſequently Light muſt be taſted, or a Sound muſt be ſeen, *&c.* which is falſe.

To this I give in Anſwer, That all Senſation is by Contact, that is, by a real or material Action, and not by immaterial *Species*, or Emiſſion of Animal Spirits, which are vain Expreſſions. The ſaid Contact is the ſame, and made in the ſame manner, but the Poſitions and Figures which it makes upon the Nerves, and its minute fibrillous Parts,

are different as much, as the Figures upon a piece of Dow, (which is the ſame in compariſon throughout all its Parts,) made by ſeveral Stamps; ſo that the Figures made by a viſible Object upon the Pores of the Optick Nerves, and upon the Spirits included in them, are different from thoſe that are made upon the Nerves of other Senſes by other Senſibles. 2. That the Senſitive Nerves do differ each from the other in Softneſs, Bigneſs, Denſity, and other Qualifications. 3. That the immediate Senſation is not in the Nerves themſelves, and the Animal Spirits contain'd in them, but in their inviſible minuteſt Terminations, or ſubtileſt *Fibrillæ*; and therefore I aſſert, that the Sight is in the *Tunica Cornea*, the Hearing in the *Tympanum* or Drum, as much as the Senſe of Feeling is in the External *Cutis*: For ſuppoſing that the *Tunica Cornea*, and indeed all the Tunicks of the Eye, are Expanſions of Nerves, and compoſed of innumerable moſt minute Chanals, that communicate with the Pores, wherewith all the Humours of the Eye are pervious, and all filled with Animal Spirits; the Poſitions they are put into, and Figures that are impreſſed upon them, are continuated to the Optick Nerve, and thence to its Beginning in the Brain. I will not here undertake the Task of an Oculiſt, in explaining the Concentration of the Optick Spirits about the Pupil, and the ſeveral Changes of Figures they undergo by Reflections in the Humours of the Eye, but paſs over to the Hearing, the Seat whereof

(as

(as aſſerted before) I take to be in the Drum, and the Terminations of Fibres of the Auditory Nerve in it, upon which Preſſure being made by the Air containing the Sound, and continu'd to the Beginning of the Auditory Nerve, is the Cauſe of Hearing. Wherefore I can in no manner be perſuaded, that the Sound made upon the Drum, beating the Hammer (*Mallens*) againſt the *Incus* (Anvil,) and propagating the Sound to the Internal Air contain'd in the long crooked Paſſage beyond it, is by the Means thereof carry'd to the Auditory Nerve; the Uſe of the ſaid Internal Air being rather to keep the Drum ſtretch'd, (as a Bladder is kept diſtended by the Air that is blown into it,) and magnifie the Sound by the Hollow, containing nothing but Air, as you may obſerve in a Military Drum, the Hollowneſs whereof doth exceedingly magnifie the Sound that is made upon it by any ſort of Percuſſion. That theſe little Bones placed in the Hollow of the Air, are ſo inſtrumental to Hearing, I cannot well underſtand, but do rather conceive their Uſe to be for a Stabiliment or Fulciment of the Hollow, and keeping the Drum, and the Circumveſtient Membrane of the ſaid Hollow diſtended. Hence it is, that the Drum of the Ear being by moiſt Weather, or damp Southerly and South-Weſt Winds ſomewhat relax'd, the Hearing is dull'd, and not ſo ſharp as it is in clear dry Weather, when the Wind gently blows Eaſterly, or North-Eaſt. Moreover, when the Drum hath been extreamly ſtretch'd by a near violent

Noiſe, Thunder, or Great-Gun, ſo as it cannot return to its due Streightneſs, but muſt fall into a wrinkl'd Skin, the Hearing is either wholly loſt, and deſtroy'd, as it hath happen'd to ſeveral having a thin dry weak Drum, upon a near and extream ſharp Sound; or is ſo obtuſed, that they can hear but very indiſtinctly. The like Accident may happen to the Sight, when any very Luminous Body makes too long and too near an Impreſſion upon the *Tunica Cornea*, whereby being too much thinn'd, and diſtended, it doth cauſe a Blindneſs; to prevent which, Nature hath framed the ſaid Horny Coat thicker and ſtronger, than any of the inferiour Tunicks of the Eye, the Uſe whereof (namely the Tunicks) I take chiefly to contain the ſeveral Humours, which reflect or turn back the viſible Object, or Preſſure made by it, to the *Tunica Cornea*, as the Quick-Silver on the back-ſide of the Looking Glaſs ſtops, or returns the Object to the Surface of the Glaſs.

The moſt excellent of the External Senſes is the Sight: Its Organ, that wonderful Machine of the Eye, conſiſts of a greater Number of fine ſmooth poliſh'd Parts, than any of the other Senſes, and is more in Uſe and Exerciſe than all of them together; for a Man that is awake is always ſeeing, and is commonly accounted awake, becauſe we obſerve his Eyes are open; ſo that neceſſarily a far greater Proportion of Animal Spirits, and the fineſt and ſubtileſt of them, is conſum'd by Seeing, than by all the other Senſes conjunctly:

junctly; whence it is, that Sleep being deſtinated for the repair of the Animal Spirits, we always perceive the neceſſity of it approaching firſt in our Eyes, which makes People commonly ſay, they are ſo ſleepy, they cannot keep their Eyes open; and therefore we do as commonly conclude a Man to be in ſleep, becauſe his Eyes continue ſhut. It is no wonder then, if blind Men can abſtain longer from ſleep than others, or that their other Senſes are much more exquiſite, than in thoſe that can ſee; becauſe that great flood of the fineſt Animal Spirits which the ſight doth require, is diſtributed to the other external Senſories. Their internal Senſes are alſo much ſtronger, in regard many blind Men have been obſerved to have ſtupendous Memories, and wonderful Phantaſies: Thence it is likewiſe, that when a Man hath a deſire to call any thing to mind, which he had almoſt forgotten, or to think very ſeriouſly upon a Subject, he is apt either to ſhut his Eyes, or look down to the ground, whereby a proportion of the optick Spirits are kept in the Brain, to aſſiſt the Internal Senſes. Moreover, becauſe ſo vaſt a ſupply of Animal Spirits is requir'd, to be tranſmitted to the Eyes for Sight, Nature hath fram'd the Optick Nerves bigger, than any in all the Body, being the only Nerves, that have a perceptible hollowneſs in them, and thereby render'd capable to give paſſage to ſuch great Floods of Spirits; not only to ſupply for that long continuance of Seeing, but alſo to ſup-

ply that variety of Parts, which is greater than thoſe, the Organs of Hearing, Smelling and Taſting do conſiſt of. I expreſſed, that commonly a Man ſeeth, or uſeth his Senſe of Seeing, as long as he is awake, by reaſon of the conſtant readineſs of viſible Objects, that will crowd in upon the Sight; he doth not in like manner always hear, or his Hearing is not always in exerciſe, though he can always hear, by reaſon there is not always a Sound or Noiſe in Being, to crowd in upon him. And though it is poſſible for a Man to conſume or ſpend abundance of Animal Spirits, by hearing a continual Noiſe from Morning to Night, ſo as thereby to make him ſleepy, yet it ſeldom doth happen, becauſe Nature can better endure the waſte of Auditory Spirits, which are incomparatively groſſer than the Optic, the loſs and waſting whereof being much greater, and a greater abundance being required for the Senſe of Seeing is the cauſe, why we allways perceive the neceſſity of Sleep in our Eyes, before any of the other Senſes, in which alſo the like neceſſity is perceptible, in regard, that when a Man grows ſleepy, he doth not care to hear, or uſe any of his other Senſes. And though by much ſtirring or local Motion, and other Labours, the waſting of the Animal Spirits in the Joints, doth occaſion ſleep, yet its always firſt perciv'd by weight or drowſineſs of the Eyes, becauſe they are deprived of their due proportion of Animal Spirits, that were tranſmitted

mitted to the Limbs, and waſted by their continuated Exerciſe.

Before I recede from this Subject, its convenient I ſhould explain, what I mean by deſcribing all Membranes to be expanſions of the extremities of Veſſels, in order to make it appear, that the Seat of all the External Senſes is in the Membranes, and not in the Nerves. That the *cutis* or ambient Skin of all Animals is a Membrane, cannot be doubted, when its look'd upon, after its dreſs'd by the Tanner or Fellmonger into Leather. That it conſiſts of the Expanſion of the Extremities of all the Veſſels, as of Nerves, Arteries, Veins, and Lymphæducts, is evident by its exquiſite Sence of Feeling, and by the leaſt ſuperficial hurt of a Scratch, cauſing ſmall owſings of Blood, and by Sweat, the extremities of the Nerves importing feeling, as the extremities of the other Veſſels lets out Blood and Sweat. By expanſion, I do not underſtand a flat ſpreading out of the ends of the Veſſels, as if it were Dow expanded by a Rowling-pin, but I do apprehend the ſaid Veſſels towards their terminations, to be divided into thouſands of ſmall Filaments, and glewed together in the *Cutis*, by a glutinous ſubſtance, (engendred out of the Humours, brought thither by the aforeſaid Veſſels) that is not ſo ſtringy or fibrous, as to be called Fleſh. It is ſcarce denied by any of the Learned, that the Ambient Skin is the chief Seat of Feeling; for though other Membranes, as the *Perioſtium*, the Internal

Membrane of the Kidneys, and moſt of all the *Tunica cornea*, and next to that, the drum of the Ear, are of a much more exquiſite Senſe, than the Skin, as conſiſting of a far greater proportion of Nervous Expanſions, and conſequently too tender, and therefore not ſo proper to diſtinguiſh all ſorts of Touches or Impreſſions, as hard, ſoft, rough, ſmooth, hot, cold, *&c.* which Impreſſions are thence continuated, by the nervous Filaments to the bodies of the Nerves, and at the ſame Inſtant to the beginning of them, and thence to the Common Senſe, which doth diſtinguiſh theſe Touches or Tacts into ſpecifications of hard, ſmooth, *&c.* And here by the way, it may be obſerv'd from the inſtance of ſome Paralytics, who have loſt the Senſe of Feeling in ſome of their Joints or Members, though their mobility or motion remains intire, that for the moſt part thoſe Nerves, that proceed from the Brain, bring the Senſe of Feeling, and thoſe from the *Medulla Spinalis* are cauſes of local Motion, which is an Argument, that the Spirits that flow immediately from the Brain, are much more ſubtil, than thoſe that are derived from the Marrow of the Back-Bone.

What I ſay here, is not to be underſtood ſo generally and abſolutely, which made me only intimate, that for the moſt part, and not all, the Nerves immediately proceeding from the Brain, do only bring Senſe; for ſome of them do alſo conveigh motion, but withal a motion ſo agil, nimble and durable,

or

or frequently repetible, beyond what any of the Spinal Nerves do or can perform, as appears in the nimble and frequently repetible motion of the Eye and Eye-lids, of the Tongue, *&c.* Neither do I exclude the Spinal Nerves, from tranſmitting Senſe and Motion together; but am to be underſtood, that theſe fine Spinal Branches of Nerves, and conſequently containing Spirits more ſubtil, that are diſſeminated through the *Cutis*, being the Seat of the *Tact* do communicate the Senſe of Feeling, and the other that are more groſs, and diſperſed through the Bodies of Muſcles, cauſe Motion.

That the Senſe of Feeling is more exquiſite at the ends of the Fingers and Toes, proceeds from the greater concourſe of fine capillar Nervous Terminations in thoſe extreme parts.

The ſpongie Membrane of the Tongue, which appears to be an expanded Contexture, out of the Filaments of the guſtative Nerves, and of the Extremities of the Coats of Arteries, Veins, Salival and Lymphæducts, is likewiſe found to be the Seat of the Taſte, eſpecially about the Tip, where there is a greater concourſe of Nervous Filaments.

In like manner, I do conceive the Drum of the Ear to be a thin ſubtil Membrane, compoſed of the Filaments of the Auditory Nerve, and the extremities of other Veſſels, that are inſerted into it. The ſound that from without makes its preſſure upon the Drum, being enlarged by the hollow of the Tortuous narrow paſſage, is carried by thoſe Filaments to

the

the Trunc of the ſaid Nerve, and thence continuated to the beginning of it, and to the Common Senſe: So that the ſound to me doth not appear, to be carried down to the further end of the ſaid tortuous Paſſage, and thence to the Auditory Nerve, no more than the preſſure of a luminous Object upon the Horny-coat, is continuated to the Cryſtalline and vitreous Humour at the bottom of the Eye, to be thence communicated to the Optick Nerve, with which it doth not ſeem to have any immediate Communication; for as I ſaid before, the humours of the Eye wrap'd up by the ſeveral Coats to keep them together from dropping aſunder, ſeem to me only intended, to modify and reflect the Object back again to the Horny tunic, whoſe contexture is chiefly of the numerous Filaments of the Optic Nerve. The *Tunica Cornea* to be aptly diſpoſed to receive the Preſſure of viſible Objects, muſt be kept up diſtended by the watery Humour (*humor aqueus*) under it, which if it be any thing leſſened, either by evaporation in a hot Seaſon, or by a Fever, ſo as to relax the ſaid Tunic, the Sight immediately grows dim upon it; and if it wholly runs out by a Wound, ſo as the Tunic happens to fall in wrinkles, then the Sight is wholly loſt. In old Men the Sight becomes dim, and ſo it doth oft upon a continual Fever, by reaſon that by length of Time, or Age, and by Exiccation, the *humor aqueus* is ſomewhat diminiſh'd, and the Tunick thereby is ſomewhat relaxed, which

which

makes it ſeem thicker, and conſequently not adapted to receive ſo vigorous an Impreſſion.

It may likewiſe be obſerved, and is now generally ſo received, that the Seat of Smelling is not in the Olfactory Nerves (I do not mean thoſe that are commonly ſo call'd by the Antients, that had mammillar terminations, (*Proceſſus mammillares*) which are now taken to be rather carriers off of ſome Excrements of the Brain) but in the internal Membrane of the the Noſtrils, through which the Olfactory Nerves are expanded in Filaments.

Since then it appears, that Nature having plac'd the Seat of all the other external Senſes in external Membranes, as parts to which the external ſenſible Objects do firſt arrive, and make their firſt and moſt ſenſible Impreſſion; it is a perſwaſive Argument to me, that the Seat of the Sight is in the *Tunica Cornea*, or *Sclerotica*, being the moſt ſenſible, and conſequently chiefly conſiſting of Expanſions of the Optic Nerve, whereas the *Tunica Uvea* or *Choroeides*, conſiſts more of a contexture of Terminations of other Veſſels. It will not be impertinent here to offer a few ſeeming Reaſons out of a great many, that induce me to ſuppoſe the *Cornea* the Principal Seat of Viſion, without excluding the neceſſary concurrence of every Tunic and Humor of the Eye, a great Fault in any of them being as capable to occaſion an abolition, diminution, or depravation of Sight, as the leaſt conſiderable Wheel in a Watch being diſorder'd, may cauſe it to ſtand, move too ſlow, or too faſt.

I

I have before aſſerted, that all Senſe is by immediate Contact of any corporeal ſenſible Object. The Touch, Smelling, and Taſte are by ſimple Contact, their Objects conſiſting of groſſer Particles; but Seeing and Hearing are, as it were by a double Contact, that is, by reflection, becauſe their Objects are more ſubtil, and without a due reflection, could not be perceived by the Eye or Ear; for by Reflection the ſenſible Object is much ſtrengthned, and conſequently obtains a greater force to move the Senſorie. The ſound made upon the uppermoſt Skin of a Drum, would not be ſo ſtrong, or make ſuch a ſort of a ſound, were it not reflected by the undermoſt Skin. Wherefore Light, or any luminous Object, being a Body the moſt ſubtil of all others, muſt neceſſarily require a due Reflection, before it's powerful enough to move the Sight. Its allow'd by moſt, that Light paſſeth in Rays, that is in Lines of continuated luminous Particles through the *Cornea*, and *Humor Aqueus*, to the *Foramen Uveæ*, where being contracted, or gathered cloſer, they make a conical Figure.

The Cryſtallin being the moſt Diaphanous, Compact, thick, and fulleſt of Pores, is capable to be crowded with a great quantity of luminous Rays (not unlike thick Glaſs, which by condenſing the Rays do magnify the Light) that are reflected or turned back by the *Humor Vitreus*, which in colour and capacity of receiving luminous Beams, through want of ſutable

Pores,

Pores, may aptly be reſembl'd to Quickſilver behind a Looking-Glaſs, reflecting luminous Objects. That thoſe Rays are reflected by the *Humor Vitreus* is ſeemingly at leaſt proved to me, by the ſeeing of thoſe falſe Appearances of Flyes and Motes in a *Suffuſion*, which appear to the Sight to be floating in the Air before the Eye, or *Tunica Cornea*: For ſuppoſing that the Light carried thoſe little Flies or Bowls directly down to the *Cryſtalline*, and thence to the *Vitreus*, *Retina*, and Optic Nerve, how can they appear floating in the Air, or on the outſide of the *Cornea*, unleſs they were reflected back again from the *Vitreus* to the *Cornea*, to make their Impreſſions there? All Refractions, which in Opticks are vulgarly imputed to a *duplex medium* of different Natures, are double, or broken Reflections, as appears in a Stick, that's partly in the Water, and partly in the Air; ſo that a Refraction not being poſſible without Reflection, it follows, that where a Man ſeeth every thing double, by reaſon of the removal of the *Cryſtalline Humour* out of its place by a fall, blow, or other violence, the viſible Objects are refracted, by a part of the *Cryſtalline* that retains its place ſtill, and partly by the *Medium* that is in that part, whence the *Cryſtalline* was removed.

To ſhew, how theſe ſenſible Impreſſions are at the ſame inſtance carried to that part of the Brain, where the Internal Senſes are ſeated, is my chief Deſign; and in Reference to that, I have been the more particular in explaining

the

the external Senſes, and the *Modus ſenſationis*. I do conceive then, that the Nerves do conſiſt chiefly of congregated Filaments, drawn into length, beſides others that are lateral, and that the beginning of the Nerves are Filaments of the medullar part of the Brain, (whereof its only ſuppoſed it doth conſiſt) congregated and gathered together into one united body, which by being afterwards divided into ſo many leſſer congregated Bodies, doth conſtitute each of the beginning of the ſaid Nerves. Wherefore I do apprehend, that an impreſſion made upon any of the ſenſories that conſiſt of Nervous filaments, the impreſſion by continuation (in the manner formerly mention'd in the Inſtance of a Cord) is carried to the beginning of the Nerves, and thence to the united body of the Filaments of the *Medulla cerebri*, were one object is diſtinguiſh'd from another, which I term *communis ſenſatio*, or *ſenſus communis*. I will likewiſe ſuppoſe, that beſides thoſe prolonged Filaments, the Nerves are filled with innumerable lateral ones, of ſeveral figures, and minute dimenſions, the various poſitions of which being actuated by Animal Spirits into ſeveral repreſentations, impreſſions and figures, if permitted to remain ſo, is Memory, and when compar'd, and variouſly compoſed, one to another is Imagination. So that I do conceive Memory to be the *baſis*, and anteceedent to Imagination, as common Senſe is of Memory, which I cannot apprehend to be other than various Acts of the *Cognoſcitive*,

noſcitive, or *Senſitive* faculty. I do very well know, that applying the ſame Aſſertion to Rational Memory, and affirming that Memory is the *baſis*, and antecedent Cauſe of Rational Imagination, admits of a conſiderable Objection, *viz.* That very oft Perſons of the weakeſt Memory have the ſtrongeſt Imagination, and the beſt Judgment, and that the Memory may be loſt, though the Imagination and Judgment ſolely depending upon that, continue entire; which I do deny, for as much of the Memory of things as is loſt, ſo much of the Imagination muſt be loſt; for ſuppoſing that you have intirely forgotten the *Idea* of a Horſe, Cow, or Dog, you can never frame any Phanſie or Imagination of them; ſo likewiſe if your Common Senſe is ſo far aboliſhed, that you cannot conceive or make a diſtinction of the impreſſions thoſe Animals made upon the Filaments of your Brain, it is not poſſible for you to remember them. Probably then this Inference may be made, that the greater Memory a Man hath, the greater muſt be his Phanſie, Knowledge, Wit and Judgment; which is otherwiſe obſerved, in regard that very oft the greateſt Memories are not attended with the greateſt Wit and Judgment. That they are attended with the greater Knowledge is moſt certain; for a Man that remembers a great many Objects, or Subjects, muſt know ſo many more than another, who doth not remember ſo many; though for what concerns his Phanſie, Wit and

and Judgment, they may be quicker, or nimbler, and more agreeable to right Reaſon in one of a weaker Memory, but no farther, and of no more Subjects than the number he remembers.

It may be abjected againſt what I aſſerted before, that Common Senſe, Memory and Imagination, are only three ſeveral Acts of one Faculty; that Mad-men oft retaining their Common Senſe and Memory intire, and having only their Imagination depraved, is an evidence they muſt be three diſtinct Faculties, whereof one being depraved, doth perform depraved Acts, and the others that are intire, do perform Acts as they they ought; wherefore ſince a ſound Act, and one that's depraved, cannot proceed at the ſame time from one and the ſame Faculty, it follows, they muſt be three diſtinct Faculties. I do Anſwer to this, that the Common Senſe and Memory in a Mad-man are depraved, to the ſame proportion his Imagination is depraved; for to him a Horſe may appear to be a Cow, or he may and doth remember things to be otherwiſe than they were firſt repreſented to him. The ſame Animal Spirits, the ſame Nerves, and medullar filaments of the Brain, do all act in the exerciſe of the internal Senſes: And that perceiving of ſenſible Objects (which is the act of Common Senſe) the retaining them, (being the Act of Memory) and the compoſing them variouſly together (which is the Act of Phanſie) ſhould be other than

Acts

Acts of the ſame Senſitive or Cognoſcitive Faculty in Beaſts, or of the Rational Faculty in Men, I can in no wiſe apprehend.

In regard the Memory of Beaſts) though ſome of them have a Brain of greater dimenſions than a Man) is ſo little capable of retaining many ſenſible Impreſſions, which are certainly material; and whereas a Man is capable of retaining of innumerable and infinite impreſſions of Words, Languages, and all things ſenſible and intelligible, it cannot be conceived, but that the Rational Faculty, and conſequently the Soul muſt be immaterial; for ſhould you ſuppoſe, as commonly its taught, that the Memory is only an Impreſſion made upon, and retained either by the ſoft ſubſtance of the Brain, or upon its Animal Spirits gathered into a ſoft Cloud; were the Brain of as large an extent as a Church, and could harbour as many Spirits, that nor theſe could be capacious enough to retain a tenth part of things, which a Man is capable of remembring. So that I ſay, the Rational Faculty muſt be immaterial, that is, cannot be performed by a material Organ, as the Brain, and its material Animal Spirits; and therefore its impoſſible for any Man to conceive the manner of operation of the Rational Faculty, as long as the Soul continues confin'd and immerged in a material or corporeal ſubſtance: And were the Soul of Man material, as ſome do believe for want of true Reaſon, it could be capable of diſcerning and remembring no more Objects, than the Soul

of a Beaſt, the Brain of ſome Beaſts being as organically and aptly framed, as the Brain of a Man, and in ſome the Animal Spirits much more fine and ſubtil.

From this Diſcourſe I do infer, that the Cognoſcitive internal Senſes, (which are ſubſervient to the Rational Faculty, comprehending a Rational or intellective Common Senſe, Memory, and Imagination) in a *Mania* are only affected; for the Intellective being immaterial, can in no wiſe be ſubject to be affected by any thing that is material; neither could any material Remedy have a power to act upon an immaterial Diſeaſe of a Man, as Madneſs muſt be termed, were the Intellective part touched, more than upon the immaterial Madneſs of a Devil.

This premis'd, I am of opinion, that the Animal Spirits in the Brain being irregularly and violently mov'd, is the cauſe of a *Mania*, by putting thoſe ſenſible Impreſſions, that are made upon the lateral minute Filaments of the Brain, into a diſorder, and changing their Poſitions, which occaſions the Common Senſe, Memory and Phanſie to be ſo depraved: That the Fury and Heat, which Maniacs are ſo frequently impell'd into, are occaſion'd by the continuated, quick, and impetuous Motion of the Animal Spirits, which thereby are grinded into very ſharp cutting, piercing Points, that diſunite the lateral Filaments, ſtimulate, prick, cut, and pierce thoſe Filaments of the medullar part of the Brain, and of the Nerves, and by the fore-

foreſaid rapid Motions the whole ſenſitive Machine is put into a Flame: That their continual wakefulneſs proceeds from the abundance of Animal Spirits (the cauſe of which ſhall be explained below) the Brain of Maniacs is furniſh'd with, the waſt of Spirits, their paucity, Feebleneſs and ſlow motion, giving commonly occaſion for Sleep. That they are in no wiſe ſubject to Fevers, taking Cold, Obſtructions of any of their Bowels, or ſcarce any other Diſtemper, or any preternatural Symptom, except over-wakefulneſs, (*vigiliæ immoderatæ*) is to be imputed to the Rapid Motion of their Animal Spirits, attenuating their Blood, promoting of its circulation, rendering the Body pervious, and free from all Obſtructions of the internal and external Pores; their Blood being more ſalin and dry, than ſulphurous, is not ſo much expoſed to a febril Putrefaction: Though it muſt be obſerv'd, that very oft before Maniacs fall into their Diſtemper, there is a great Calm and ſlowneſs of Motion in the Animal Spirits, which occaſioneth a very ſlow motion in the Humours about the Bowels, and very oft a Stagnation, that diſpoſes them to a particular ſort of putrefaction, whence gradually proceeding ſome putrid, ſalin, ſharp, acuated or pointed Particles, that oppreſs the Animal Spirits, dull their Motion, and cauſe ſuch a diſorder in their Blood, that is productive of ſuch Symptoms, which commonly Melancholic Hypochondriacs are troubled with

as Sighing, heavy, ſorrowful and deſponding Thoughts, palpitations of the Heart, Frights, Fears, Sloathfulneſs in ſtirring, Languidneſs, *&c.* Theſe forementioned putrid, ſalin Particles, as they ariſe, and ſeparate gradually, and are afterwards mix'd with the whole Maſs of Blood, increaſe the prenumerated Symptoms, until at length great Crowds iſſuing thence, do ſo violently move, ſtimulate, impel, and hurry the Animal Spirits into a Tempeſt and Fury, whence ſoon after thoſe other Manical Symptoms do follow.

A *Mania* or Madneſs, though it be only a Symptom, and the chief and moſt urgent of the others, that are aſſociated with it, is as all other chief Symptoms, commonly called a Diſeaſe by a *Metonymia Adjuncti pro ſubjecto*. By the ſame tropical manner of ſpeaking a Fever, or rather Fervor, is called a Diſeaſe, from the burning heat that doth oft accompany it, though it be but a chief Symptom. This I thought fit to obſerve, to prevent your judging it a miſtake in me, in calling a *Mania*, and many, if not all chief Symptoms a Diſeaſe, which is a very common way of ſpeaking among moſt Phyſicians.

That in Maniacs the functions of the Bowels, and other parts are performed with greater vigour than in others, appears by their digeſting almoſt any thing that's edible, by their copious Excretions by Stool, Urine, and Swear, by their wonderful and almoſt incredible ſtrength of their Limbs, ſo as ſometimes the ſtrength of a Madman, ſhall exceed the

the united force of four or five Men, that have their Senſes intire. Their Hearing, Seeing, and other Senſes are much more exquiſite (though depraved) than in others, in regard Madmen will hear the leaſt noiſe, and ſee the leaſt Object, beyond what they could do when they were *Compotes*. The Cauſe and Reaſon of all which is the abundance of Animal Spirits, that are contained and engendred in Madmen, inſomuch that it may be preſumed, the greateſt part of their Blood is ſpiritualiz'd, or converted into Animal Spirits; for without ſuppoſing this vaſt plethory of Spirits, it's impoſſible they ſhould be always, Night and Day, uſing their Tongues and Limbs in ſo furious and violent a manner, without any long intermiſſions of Reſt or Sleep. This Plethory ariſeth from the almoſt perpetual, violent, quick and nimble motion of the Animal Spirits, piercing, grinding, and ſubtilizing the greateſt part of the Blood into Spirits ſimilar to themſelves.

If a Madman, after he hath continued in a long raving Fury, falls into a long intermiſſion of Silence, hardly to be provoked out of it, that muſt be adſcribed to the great expence and waſt of Animal Spirits, by his long fit of Fury, which he is forced to repair, by giving the remainder of his Spirits time to breed more.

His reciprocal ſeaſons of Madneſs, intermix'd with intervals of Rational Diſcourſe, in ſome for a longer time, in others ſhorter, may be attributed to the variety of motion

in his Spirits, which ſometimes moving regularly and naturally, are the occaſion of the latter, to wit his lucid Interval, whereas he is impell'd into the former by Fits, as frequent, as there is a new ſallying out of a crowd of the forementioned putrid ſalin Particles, mixing with the Blood, and upon its arrival to the Brain, mixing with the Spirits.

I have been obliged to make an expatiation in the Theory of the external Senſes, to the end I might more eaſily explain the manner of natural Operation of the Internal, thereby in ſome ſort to apprehend the manner of their preternatural Operation in a *Mania*; which I did the rather, that I might give my ſelf the occaſion of examining the practic part, relating to the curing of Diſeaſes of the Eyes and Ears, as well as of the Brain. If I have not been ſo ſucceſsful in theſe moſt difficult and abſtruſe Matters, as I could wiſh, or as others of a much better capacity might have been, I hope I may be excuſed for my attempt, were it only for propoſing the Subjects, and giving others an opportunity to exerciſe their Induſtry and great Abilities. However, I ſhall preſume to give you an Account of what uſe I make of the ſaid Theory.

Firſt, In relation to the Eyes, the *leſion* of the Sight is either cauſed by the fault of the Optic Nerves, and their expanded Filaments, the decay, waſte, and vitious conſtitution of the Animal ſpirits, or the vitious diſpoſition of the Tunics of the Eye, but eſpecially of the Horny-coat, or by the fault of the Humours

mours, I mean the aqueous, vitreous, and cryſtalline, whoſe Office I did only ſuppoſe is, to ſupport and keep the Tunics juſtly diſtended, and by Reflection, to return the viſible Impreſſion to the *Horny-coat*.

I do only pretend here to take notice of ſome defects of the *Horny-coat*, the *Humor aqueus*, and Optic Nerves; for ſhould I here inſert, what may be practically obſerved, concerning all or moſt Diſeaſes that are incident to the Eyes, and their ſeveral Coats, Humours, Muſcles, and Optic Nerves, a large Volume would be ſcarce capacious enough to contain it.

The forementioned Tunic being of too thin a texture (from the tenuity of the Nervous Expanſion) and the extreme ſubtility of the Optick Spirits, and the tenuity of the Aqueous Humour making too little reſiſtance to the luminous Particles, coming from a great diſtance; the ſaid luminous Particles being too much thinned, and loſing ſome part of their Luſtre, are thereby not congregated enough, by reaſon of the rarity of the foreſaid Tunic and Humour, and conſequently have too little force to act upon them; whereas in a Tunic, that is of a more compact texture, and conſiſting of more numerous, though much ſtreighter Pores, the luminous Rays are much eaſier gather'd together, and conſequently may operate from a greater diſtance. This laxity of the ſaid Tunic and Humour is two-fold; one natural, and the other adventitious, by reaſon of ſome Diſeaſe, as a Fever, Con-

ſumption, *&c.* The former is in no ways to be medled with. The latter either ceaſeth upon the removal of the Diſeaſe, that cauſed it, or if it ſhould continue, may be remedied by waſhing the Eyes daily with water, wherein a very little Salt-Petre, or rather Sal Prunellæ hath been diſſolv'd; or you may two or three times in a Day drop into the Eye, a drop or two of this Solution, *viz.* two Grains of white Vitriol diſſolv'd in two Ounces of ſome clear Well-water; wherefore you are to take notice, that moſt common Eye-waters, that are cried up for Sovereign Remedies againſt all, or moſt Diſeaſes of the Eyes, are ſtrictly to be avoided in all ſhort Sights, whereby they would be rendred much worſe. Such ſort of Waters are uſually diſtilled from Fennil, Celandine, Eye-bright, Rue, Vervain, Male pimpernel, Hogs-Fennil, *&c.* Beſides, in ſhort Sights the diſtention of the *Horny Tunic* is too weak and ſlack, by reaſon of the looſe texture, and thinneſs of the ſaid Tunic and Aqueous Humour, upon which the feeble and almoſt ſpent Rays, that arrive from a great diſtance, can ſcarce act or exerciſe ſuch an Impreſſion or Motion, as is neceſſary for Sight. On the other hand, where the ſaid Tunic is of a good Texture, and fully diſtended, Objects are perceptible from a much remoter diſtance: But where the forementioned Tunic is grown too thick, and conſequently leſs diaphanous, and leſs porous, that Sight is neither good at a diſtance, nor near, as its oft obſerv'd in old Folks.

Folks. Moreover, in thoſe the *Humor Aqueus* is very much thickned, ſo as to deny a full and free paſſage to the luminous Beams; the ſaid Humour is alſo become leſs turgid, and of ſmall compaſs, whereby the *Horny Tunic* becomes leſs diſtended, and a little flatted, ſo that the viſible Object muſt neceſſarily act very feeble upon it, the Rays not being ſufficiently congregated, through its defect in convexity. Add hereunto, that in them the Optic Spirits are grown few, groſs, and fumous, which renders the perception of the Object dim, and cloudy.

To preſerve the Eye-ſight, is to retard, and hinder it from becoming ſuch, as it is in old People; that is, 1. By rendering the Animal Spirits light, ſubtil, clear, and more copious. 2. By attenuating the *Horny Tunic*, and the watery Humour. 3. By avoiding ſtraining of the Sight, by exerciſing it long and often upon very ſmall, ſhining, diſperſing, or very diſtant and remote Objects.

The firſt of theſe means conſiſts in keeping the Body clean of groſs Excrements, which gave ſo frequent occaſion to the Antient Phyſicians, to invent Pills peculiarly appropriated to the Sight, and diſtinguiſh'd with Names referring to it; As *Pil. Lucis majores* and *minores*; and others, as *Pil. Aureæ, ſine quibus, Cochiæ majores* and *minores, &c.* I cannot think, any of theſe Compoſitions hath any more regard to the Eyes, than to the Toes; but becauſe in the maſs of *Pil. Lucis maj.* and *min.* is contained a very ſmall proportion of

Eye-

Eye-bright, mix'd with Aloes, and *Colocynthis*, together with a great many contrary Ingredients, which ſerve for nothing elſe, but to clog the Medicine, and all this is to be made into a Paſte, with Juice of Fennil, they thought they had reaſon enough, to expect from them and the others forementioned, all the Virtues, whereby to preſerve Sight, and cure the Eyes of all Diſeaſes paſt, preſent, and to come; but what is a greater wonder to me is, that ſtill there are many Phyſicians, that allow a very great reſpect to the ſaid Pills in Diſeaſes of the Eyes, whereas moſt certainly a good *Extractum Rudij*, or *Catholicon* well compoſed, and made up, will ſerve abundantly better, cheaper, pleaſanter, and more effectually in any Diſeaſe, that may require ſtrong Purging; ſo that were all thoſe Colocynth and Scammoniack Compoſitions, which modern Diſpenſatories are cramm'd with, thrown out, it would be much more profitable to the Patient, and leſs troubleſom to the Apothecary.

What I mean by keeping the Body clean, is to take now and then thoſe Pills, which are recommended in the foregoing part of this Treatiſe, without adding the leaſt grain of Eye-bright to them. Beſides this, its neceſſary to abſtain from all groſs, windy, ſteaming Meats, Salt-Fiſh and Fleſh, ſowr Sauces, ſtrong Drinks, Feeding chiefly upon Meat of a good Juice, and that yields but little Excrement, and uſing Drink that's clear, well digeſted, and moderate in ſtrength. Nothing hitherto

hitherto hath been obſerved a greater Enemy to Sight, than Wormwood, which being uſed in Drink, or otherwiſe, hath been the occaſion of dulling the Sight in ſome, and of Blindneſs in others; yet notwithſtanding *Dioſcorides* commends it for a ſharpner of the Sight, and therefore little credit ought to be given to theſe old Authors in many of their Characters. Onions, Leeks and Garlick, come not much ſhort of that Plant. All raw Sallads are experienc'd hurtful to the Sight, by contributing matter for Crudities, and being windy. Weeping in Women, a long ſorrowful and melancholic Diſpoſition, and too much gravity do leſſen, condenſe, and blunt the Optic Spirits, which ought to be ſerene and agil. Living in a dark Houſe in a foggy Air, work effects little different from the former. Too much Sun-ſhine reflected from a ſandy Ground, hath been the cauſe of Blindneſs in many that live in *Spain*. Very hot Countries contain more Blind, than thoſe that are temperate, or cold, tho' in the latter, they are not commonly quick or fat Sighted, exceſs of Cold condenſing the Optick Spirits too much. As Weeping and great Debauchees do oft furniſh their Eyes with an outward glazie Coat, ſo they do not ſeldom according to the common Phraſe, drink their Eyes out. It may probably be ſaid, *Viſum debilitant Balnea, Bacchus, Amor*, as well as *Corpora*: And on the other hand, whatever may be ſaid to preſerve the Body in Health, doth preſerve the Sight. Smoak

and

and Duſt are none of the leaſt Enemies to the Eyes.

The attenuating the *Horny Coat* and the *Humor Aqueus*, (which at the ſame time attenuates the Optick Spirits, depurates and renders the foreſaid Tunic and Humour clear and diaphanous) is commonly attempted by inward and outward Medicines, that have a power to diſcuſs Winds, and move Urine, proceeding from their ſubtil Particles, that are ſuppoſed to be very attenuating, and conſequently diuretic, and diſcuſſive. Theſe Medicines are uſually called *Oxydercica*, that is, ſharpners of the Sight, from ὀξὺ, *acutum & ὄψις, video.* Such are accounted all the greater and leſſer hot Seeds, but chiefly *Fennil* and *Daucus*, Elicampane, Orange-peel, Maſterwort, *Calamus aromaticus*, *Virginian* Snakeweed, Cubebs, Galangal, *Rad. cyperi longi, & rotundi*, Paradiſe Grains, Cardamum, Zedoary, *ſem. ſileris montani. ſem. ſeſeli Maſſilienſis*, Nutmegs, and moſt ſort of Spices. On the other hand, all Antiſcorbutics, eſpecially Muſtard and Garden-Creſſes, are accounted pernicious to the Eyes; and Ginger, Pepper, and Perſly, as diſcutient as they are, offend the Sight, and ſo do moſt Sowrs. Theſe following are eſteemed ſpecific Oxydercics, *viz. Eyebright*, the *greater Celandine*, *Vervain*, *Fumitory*, *Valerian*, *Avens*, *Rue* and *Clary*, than which laſt, nothing can be found a greater Darkner of the Sight, and more offenſive to the Eyes; for being put into Wort to ferment with it, renders the Drink the moſt inebriating,

ebriating, and diſcompoſing all the Senſes, beyond any other vegetable, excepting Darnel. And yet being outwardly applied, is very excelling in thinning the Coats of the Eyes, and watery Humours, and very diſcutient in clearing the Sight from dimneſs or cloudineſs. As great an Author as *Platerus* is, he recommends *Radiſhes* and *Muſtard* for ſpecific Sight ſharpners, than which common experience doth moſt certainly convince us, nothing can be a greater Enemy to the Sight: which informs us, that we are not to take things upon truſt ſo ſlightly, as moſt Phyſicians and others are apt to do, without comparing them with the Rules of Experience and Reaſon.

Thoſe forementioned Aromatics, Seeds and Roots, are diſcutients of Wind by their ſubtil Particles, which they perform by attenuating of groſs Humours into Bubbles, which breaking, emit thoſe Winds, or crude mix'd Aery Spirits, that afterwards are ſometimes avoided upwards or downwards, or are impell'd into the Veſſels; theſe mounting upwards, do for a time much diſturb the Sight, until they are either diſcuſſed by the Spirits, that are in the Eyes, and aſſiſted therein by a further continuation of the uſe of the ſaid attenuating Aromatics, and Seeds. Hence it is, that very oft thoſe attenuating Oxydercics do render the Sight much worſe, and ſometimes in Phlegmatic Conſtitutions uſher in Blindneſs at firſt, though othertimes alſo the continuation

tion of them may diſcuſs the Winds they firſt rais'd; wherefore a great deal of Caution ought to be uſed in the Application of them: So that it appears plainly, that the ſame Oxydercics may remedy the Sight, and keep off Blindneſs in ſome; though in others they moſt certainly cauſe Dimneſs of Sight, and Blindneſs.

Diuretick, by carrying off the Salts of the Blood by Urine, (they by drying up the Aqueous Humour, and corrugating or condenſing the *Horny Coat*, thicken and leſſen the former, and harden the latter in Old People, whoſe Eyes therefore do appear thick, dull, flat, ſlow in Motion, *&c.*) have been experimentally found very advantageous, not only in preſerving and meliorating of the Sight, but in preventing and removing many Diſeaſes incident to the Eyes. Among thoſe *Millepedes* or Sowes moderately uſed either in Ale, or otherwiſe, are univerſally, and by common Experience, preferr'd beyond all others; for being copiouſly furniſh'd with very ſubtile penetrating light Spirits, they do not only carry off Salts by Urine, but attenuate and diſcuſs what is groſs in the Watery Humour, and all the Tunicks, and ſubtilize the Animal Spirits; which Qualities ſeem to render them ſpecifick to the Eyes.

Some do uſe *Ground-Ivy* in their ordinary Drink, to preſerve their Sight, to no great purpoſe: But in *Valerian* and *Vervain* (a quantity of one or both being added to the Wort

Wort before, or while it is working) many do affirm to have experienc'd a great Power, in preſerving their Sight, and removing Dimneſs. To mend the Taſte of ſuch ſort of Ale, a moderate Proportion of *Elicampane-Root*, *Orange-Peel*, or a few *Daucus-Seeds* might be added. *Bean-Stalk* Aſhes, to the quantity of five or ſix Ounces, if they are clean, put to a Firkin of Small Ale after the working, jumbling them well together, and allowing them four or five Days to ſettle to the bottom, did they not blunt the Taſte of the Drink ſo much, would prove more powerful, than any of thoſe Vegetables.

As for the Externals, I ſhould be loth to adviſe any Perſon to Compounded Eye-Waters, to preſerve his Sight: The Waſhing the Eyes daily with clear Spring or Rain-Water is ſufficient. Water that hath ſtood long in a Leaden Ciſtern, is accounted hurtful, there riſing a very ſharp offenſive Steem in Length of Time from the Lead, that mixeth with the Water.

Thoſe whoſe Eyes are weak from their Birth, ought to avoid tampering with any ſort of *Oxydercicks*, Internal, or External, their Weakneſs of Sight depending much upon a natural Laxity of the Optick Nerves, and Tunicks; their Humours of the Eye being alſo thin, and their Optick Spirits looſe, and not compact; all which may be eaſily render'd worſe by uncertain Remedies, and never or ſeldom better, though their Growth in Age, Change of Climate, or Diet, may con-

conſiderably contribute towards the Meliora-tion of their Sight. A Weakneſs of the Eyes, that Sickneſs might have left, doth oft go off with the Weakneſs of other Parts, by the Recovery of Strength of the Brain and Bowels. But if that Weakneſs ſhould ſingly remain, then beſides due Evacuations, general and particular, Recourſe may be had to proper Internal and External *Oxydercicks*, which ought to be choſen with the ſtricteſt Caution.

Among Diſeaſes of the Eyes, I do account a *Suffuſion*, *Cataract*, and *Gutta Serena* the moſt dangerous; and an *Ophthalmia*, or Inflammation, the moſt painful, and oft an Antecedent Cauſe of the others.

A Suffuſion, or *Hypochyma*, ſeems to me to proceed either from ſome ſubtile Winds, or Windy Spirits, ſallying out of the Arteries, or Pores of the Nerves, and breaking into the Watery Humour of the Eye, there cauſing very minute Bubbles of various Figures, which being actuated or moved by the Luminous Rays, (for when a Man's Eyes are ſhut, whereby the ſaid Luminous Rays are excluded, he is not in the leaſt ſenſible of them,) do produce thoſe Appearances of little Bouls, Flies, and other ſmall Shapes, floating or flying to and fro before the Eyes.

There are commonly obſerv'd two kinds of thoſe Suffuſions: The one ariſing from Crudities of the Stomach, or Flatuous Hypochondriack Humours of the Bowels, is not durable,

durable, though oft returning by Intervals. Thoſe little Figures, that do deceitfully impoſe upon the Sight, moving much quicker, than in the other kind, and meeting together, join into a Cloudineſs, that quickly vaniſhes, by reaſon that thoſe Windy Spirits, which iſſue through the Pores of the Arteries, being of a Vaporous or Watery Compoſure, are much lighter, move nimbler, and are much eaſier diſcuſſed, than thoſe Windy Spirits, that are preſſed out of the Pores of the Nerves, which being of a more ſaline, tough, heavy, and compact Mixture, conſequently durable, and conſtantly abiding, (becauſe not eaſily diſcuſſed,) make Repreſentations of larger Figures, and are moved much more ſlowly; and conſiſting of clammy or viſcous moſt minute Particles, are very apt to unite; whence it happens, that their Repreſentations are diſpoſed to grow daily bigger and bigger. Theſe Viſcous Windy Spirits are ſubject to be precipitated, or impelled to the Pupil, or *Foramen Uveæ*, by the conſtant paſſing of the Luminous Particles in Beams or Rays towards the ſaid *Foramen Uveæ*, where they are concentrated, or gather'd together in the Figure of a Cone, the ſaid *Foramen* forming the narrow End of the Cone, as the *Cornea Tunica* doth the broad. So that it is the ſaid Viſcid Nervous Winds, impell'd by the continual paſſing of the Luminous Rays to the *Foramen Uveæ* into an united Body, which at length doth form that Preter-natural Skin, called a

Cataract, being a diſcernable Cauſe of Blindneſs, in Contradiction to a *Gutta Serena*, the Cauſe whereof is not externally diſcernable, but commonly aſcrib'd to groſs Humours, obſtructing the Hollow of the Optick Nerves, and ſtopping the Influx of the Optick Spirits. I cannot but wonder, whence thoſe groſs thick Humours ſhould be ſent, or how convey'd; not from the Medullar part of the Brain, where Arteries or Veins are ſcarcely diſcoverable, and whoſe very Compact Subſtance is no more ſuſceptible of of any thing that is groſs, than the Beginning of the Optick Nerves: Beſides, ſuch ſort of ſlimy groſs Humours might eaſily, in the beginning of a *Gutta Serena* be melted down, and carry'd off by the common Head-Purgers, which are generally very ſtrong and churliſh; as *Pil. Coebiæ maj.* and *min. Pil. Arabic. e duobus. Elect. Indum maj. & min.* and all their compounded *Hiera's.* So that to me the *Ætiology* of this, and almoſt of all the reſt of the Diſeaſes of the Eyes, ſeems *gratis dictum.*

It is more apparent to me, that the moſt frequent cauſe of a *Gutta ſerena* is the nervous *Lympha*, (which is the Vehicle, or rather is the *Materia* conſtituting the groſſer Particles, which united with the ſubtiler and moſt ſubtil Particles, ſeparated out of the beſt and fineſt parts of the Arterial Blood, do compoſe the Animal Spirits) being grown too groſs, thick and viſcous in the Optick Nerves, ſtagnate there, and makes a Damm, thereby hinders

ing

ing and putting a ſtop to the influx of the Animal Spirits, from the Brain to the Eye, which ought not to be termed Optick Spirits before they arrive thither. By this ſuppoſition, a *Gutta ſerena* ſeems to be a Palſie (*Paralyſis*) of the Optic Nerve; all other Palſies, whether univerſal or particular, being engender'd by no other cauſe, than by the ſtagnation of the Nervous *Lympha*, (being render'd groſs and viſcous) in the beginning of the Nerves in the former, and in particular Nerves in the latter. After a proper Purge or two to clear the Paſſages, and make room in the Veſſels, how little advantage can be expected from frequent Cathartics, though violent, or any other Remedies vulgarly in uſe againſt a *Gutta ſerena*, or any other Palſie, may be eaſily underſtood from the forementioned *Hypotheſis*; for ſhould you purge *ad infinitum*, you can never pretend to draw off that coagulated Nervous *Lympha*, but rather by drying all the Humors in carrying off the moiſter and thinner part, you muſt neceſſarily render it worſe, which by long continuance doth turn into a hard ſubſtance, much tougher than the Nerve it ſelf, or the tougheſt Leather, and conſequently muſt be incurable. And much leſs advantage can be hoped from any of the celebrated Eye-Waters, ſome whereof are pretended to have cured thoſe that have been blind 20 years, and go under the Name of ſome Queen's or Lady's Eye-water, all which is no more to be credited, than the Atchievements of a Knight Errant; for you may as reaſonably

pretend to break the Stone in the Bladder by applying *Millepedes* to the Soals of the Feet, as to diſſolve a *Gutta ſerena* by an Eye-water, if you conſider the great diſtance from the *Horny Tunic* (to which they are to be apply'd) to the Optic Nerve, the ſeveral Coats and Humors of the Eye, the extream tenderneſs and ſenſibility of the ſaid Coats, and the neceſſity of an extraordinary piercing Remedy, which ſure I am, is not greatly to be found in thoſe Aromatics, Seeds, and Oxydercic Leaves, of which moſt Eye-waters conſiſt, and are very repugnant to the qualities of Aloes, Honey, *Tutbia*, white Vitriol, Sugar candy, Sugar of Lead, and other Materials, that are oft ridiculouſly enough added to them, I do know, that ſometimes, once poſſibly in two or three Ages, a *Gutta ſerena* hath been removed by an accidental Salivation, othertimes by a ſudden violent Fever, that by rarefying all the Humours, and putting the Animal Spirits into a violent motion, the viſcous Damm hath been pierced through, and violently expelled. But theſe are means, that if imitated, do ſeldom or never attain the ſucceſs hoped for.

Beſides the cauſe forementioned, Convulſions, and Tumors of the Muſcles of the Eye near the heads of them, have cauſed a *Gutta Serena*; the former, by contorting the Optic Nerves, and altering the Figures and Poſitions of their Filaments, which I do remember occaſioned a *Gutta Serena* in the Lord *G*'s Lady, when living in the *Pall-Mall*, upon the taking of *Vinum Benedictum* (*Maledictum* ſometimes)

times) preſcribed by her Phyſician, at the requeſt of the Patient I preſume, and probably ill prepared, and overdoſed by the Apothecary, contrary to the directions of the Doctor: The latter perform this unfortunate effect, by compreſſing the Optic Nerve, which ſometimes is removed, but not always.

A *Gutta Serena* may ſometimes be removed with great difficulty in the beginning, *præmiſſis univerſalibus*, by potent, ſulphurous, and oleous internal Medicines, which under that ſhape, may preſerve a great part of their Virtue until their arrival to the Brain and Nerves, and poſſibly ſome of them may externally be let in by the Veſſels of the Head, but then thoſe Internals muſt be frequently exhibited in large Doſes, and continued for a long time, even to the brink of a Fever, or ſome other contrary Diſtemper; and this is the only Method to cure all other ſorts of Palſies, which I have followed more than once.

A *Cataract* is beſt cured in the beginning, and whilſt it continues to be a *Suffuſion*. Internal means are as neceſſary as external. Sugar of Lead, being well prepared by digeſting Spirit of Wine with it, and abſtracting it afterwards by diſtillation, and diſſolv'd in a convenient Vehicle, is not only an excellent Topic in this Diſeaſe, but in many others of the Eyes, eſpecially in an *Opthalmia*, *taraxis*, and *Chymoſis*, Ulcers of the Tunics, and *Epiphora*, &c. for there is a Spirit in Lead, being well corrected and managed, is the moſt diſcutient and penetrating of any

in

in reſpect to the Eyes; beſides, the Salt, contains a great Sweetneſs, and is indued with many ſingular Virtues.

An *Ophthalmy* I do ſuppoſe to be occaſion'd by Evaporations of the *Lympha*, contained in the capillar *Nervuli*, diſſeminated in the *Tunica conjunctiva*, being grown very ſharp and corroding, (as is formerly mentioned) which Evaporations being condenſed into ſmall drops or gleets, and meeting with other Juices, cauſe an effervеſcency and coagulation, to which pain *ſupervening* invites other Humours, that together produce ſuch a ſort of Inflamm ation. I have oft obſerv'd, that the application of cold Medicines (as whites of Eggs, Conſerve of Roſes, and other Reſtringents) hath ſo little abated the Diſtemper, that it render'd it much worſe. This Diſeaſe is ſometimes painful to extremity, and very oft of a long continuance, inſomuch that I have known it protracted to nine or ten Weeks, and doth not ſeldom leave other miſchievous Diſeaſes behind it.

What Concerns the Practical Part of a Mania *or Madneſs.*

Bleeding frequently repeated in the Arm and Foot, alſo at the Hæmorrhoids, is commonly adviſed as an univerſal and neceſſary premiſs, to anſwer the Indication of the Plethory of Humours and Spirits, that moſt Madmen are ſubject unto, occaſion'd by their greedy and ravenous Appetite; notwithſtanding if uſed more than neceſſary, itd oth certainly cauſe a moaping, and ſtill leave a *deſipientia* and depravation of their Internal Senſes, ſo that there muſt be a great caution uſed in this particular. I do very well know, that by bleeding ſubſtracting the matter, whereout that abundance of rapid and furious Animal Spirits is engendred, the diſorder of the Brain is oft leſſened, but ſoon returns again upon the repleniſhing of the Body. By abating of the Blood, the Spirits

are

are diminiſh'd; and conſequently the heat of the Brain, which the violent motion of the Spirits occaſion, muſt be in ſome meaſure moderated. However, I can look upon Bleeding no otherwiſe, than a concurring remedy, or a remedy *per accidens*, and doth not directly anſwer the Indication of clearing the Body, and particularly the Brain, of thoſe putrid, acute, pungent, ſaline Particles, nor doth it make that change upon the Bowels, ſo as to prevent the engendring the ſame again, which is the chief Indication in the cure of a *Mania*.

Strong Purging by *Senna*, *Turbith*, and *Scammony*, and particularly by black *Hellebor*, is what the pretended Maſters of Mad-houſes do moſt depend upon, as ſome Phyſicians do upon *Antimony*, in the form of a Regulus, Glaſs, or a *Crocus Metallorum*, whereby they endeavour not only to throw off the *Saburra* or heap of groſs excrementitious Humors, but by ſtimulating and ſhaking of the Nerves thro' the Vomits and ſtools it moves, they do expect theſe ſlimy putrid Particles ſhould be thrown off from the Brain and Nerves: And in this ſome have been ſucceſsful, tho' but in few. The inconvenience lyeth here, if by too frequent ſtrong Purgations, you do drain the groſs ſaline Humours of their *Serum*, which doth both render them fluid, and dilute their Acrimony, you do exceſſively ſharpen thoſe Humours, encreaſe the Obſtructions, and by violently fermenting of them (which ſtrong Purgatives moſt certainly do) force them to ſteam up thoſe putrid pungent Particles, whereby *Maniacs* are render'd much worſe; wherefore its more adviſable, after a ſmart Purge or two, to depend upon moderate Purgatives, as *Pil. Tartar. Quære. Pil. Stomach. cum gum. Diaſenna*, &c.

After all, Bleedings and Purgatives being only a niverſal neceſſary premiſſes, the chief Indication is to rectify the Bowels, ſo as to prevent the engendring thoſe groſs ſaline Humours, and to clear the

the Brain of the foreſaid pungent Particles, whereby the ſeveral parts of the Brain may be reduc'd to their natural figures and poſitions, and the exerciſe of their Function. I do not perceive, that practical Authors do recommend any Remedies of that kind with any confidence, neither do I find many Compoſitions deſcrib'd in Diſpenſatories for that purpoſe, and thoſe that are, differ little from ſuch as commonly are adviſed againſt Hypochondriac Melancholy, and are to be uſed for a long continuance, the tediouſneſs of which Courſe doth not only tire the Phyſician, but the Friends of the Patients alſo, who therefore commonly commit them to the care of ſuch, as make it their buſineſs, and are willing to be watchful over them, and keep them quiet and in a low moderate Diet, intermixing gentle Purgings, and Bleedings at Intervals, whereby ſome are recover'd. Now and then when they are very furious, and overwakeful they give 'em Opiates. Some uſe Cupping to the Shoulders, with and without ſcarification; others uſe opiated Ointments to their Temples, and bathing of their Heads being ſhaved, with Decoction of Cephalic Herbs, Flowers, and Seeds, *&c.*

I have had the fortune to cure ſeveral, in a little more or leſs than ſix Weeks, by Bleeding of 'em twice or thrice, and Purging them gently with Minerals. In the Intervals I gave them Antihypochondriac Tinctures, compoſed chiefly of Minerals.

Maniacs, whoſe Figures and Poſitions of the Filaments of the Brain and Nerves have been much changed, and diſplaced by a long continuance of their Furies, are incurable. I might add a great many Obſervations to this Head, but the ſhortneſs of my time obliges me to come to a

FINIS.